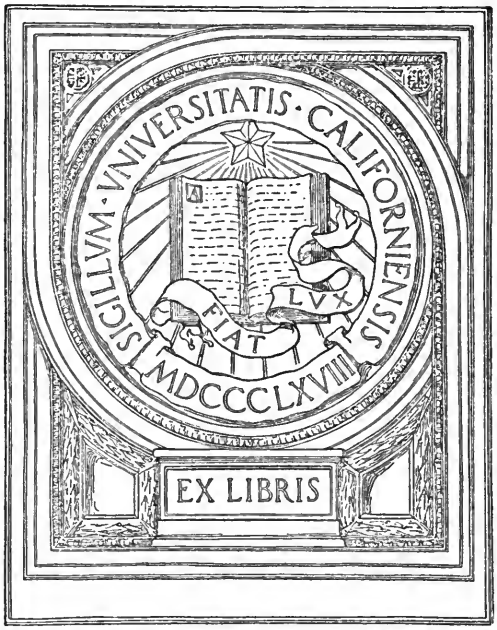

THE HISTORY AND DEVELOPMENT

OF

PACIFIC COAST MANUFACTURING .

by

Frank C. Doty.

To Prof. E.A. Ross,

For the Economic Seminary.

Stanford University, May, 1896.

c1896:2

THE HISTORY AND DEVELOPMENT

OF

PACIFIC COAST MANUFACTURING.

by

Frank C. Doty.

To Prof. E.A. Ross,

For the Economic Seminary.

Stanford University, Jan. 1898.

INTRODUCTION.

The term 'Pacific Coast" as used in this paper applies generally to California, Washington, and Oregon. Sometimes it also includes Utah, because there is the birth place of the manufactures of the Pacific Coast in its broadest sense.

Sometimes its application is restricted to California, because there is a lack of definite and accurate information from the other states.

The paper has been divided into three parts. In the first, 'Origin of Pacific Coast Manufactures' the aim has been to point out the conditions giving rise to Coast Manufacturing. In the second, 'Selected Industries', five of the chief industries were selected for a somewhat detail study. The production of the raw material is touched upon, as well as the general account of the industry in its manufactured side; together with some account of individual establishment or factories. The five industries chosen are Woolen, Cotton, Iron, Beet Sugar and Flour. In third part are brought together those factors that have worked for the development, both in a positive and negative manner, of the Coast's industries. Only a general account is here given.

INTRODUCTION.

The term 'Pacific Coast' as used in this paper applies generally to California, Washington, and Oregon. Sometimes also includes Utah, because there is the birth place of the manufacturing of the Pacific Coast in its broadest sense.

Sometimes its application is restricted to California because there is a lack of definite and accurate information from the other states.

The paper has been divided into three parts. In the first, 'Origin of Pacific Coast Manufactures' the aim has been to point out the conditions giving rise to local manufacturing. In the second, 'Selected Industries', five of the chief industries were selected for a somewhat detail study. The production of the raw material is touched upon, as well the general account of the industry in the manufactured and together with some account of individual establishment or factories. The five industries chosen are Woolen, Cotton, Iron, Beet Sugar and Flour. In third part are brought together the factors that have worked for the development, both in a positive and negative manner, of the Coast's industries. Only a general account is here given.

CONTENTS.

CONTENTS.

Chapter III.

Factors in Pacific Coast's Manufacturing Development.

Chapter III.

Factors in Pacific Coast's Manufacturing Development.

Chapter I.

ORIGIN OF PACIFIC COAST MANUFACTURING.

Mining, Agriculture and Manufacturing are the three great industries of the Pacific Slope. Mining, chronologically considered, occupies the first place. But it is not so easy to say positively which of these is first, Agriculture or Mining; because when mining began to lose its prestige as a controlling industry and therefore of the mining period attention was turned to each of these industries about the same time.[1]

Agriculture, however, deserves the second place, because its development has been more steady and constant. Mining was predominant, Agriculture was predominate, and now the question, Is there any reason to think that Manufacturing will become predominate? presents itself.

Mining, as stated above, was the first great industry of the Coast. It has had a more direct bearing upon and con-

- -

[1] Cal. Agri. Society Report, 1888, p. 450-451.

Chapter I.

GROWTH OF PACIFIC COAST MANUFACTURING.

Mining, Agriculture and Manufacturing are the three great industries of the Pacific Slope. Mining, commercially considered, occupies the first place. But it is not easy to say positively which of these is first. Agriculture or Mining; because when mining began to lose its prestige as a controlling industry and therefore of the mining period of attention was turned to each of these industries about the same time.

Agriculture, however, deserves the second place, because its development has been more steady and constant. Mining was predominant, Agriculture was predominate, one for the question, is there any reason to think that Manufacturing will become predominant? presents itself.

Mining, as stated above, was the first great industry of the Coast. It has had a more direct bearing upon and con-

---

* Cal. Agri. Society report, 1860, 480-481.

stitutes a greater part in the development of Coast manufactures than has been ordinarily assigned to it. What a power has been the stream of influence that has flowed through the door,, opened by John Marshall, when he picked up the golden key in the "beautiful vale" on the twenty-fourth of January, eighteen hundred and forty eight.[1]

It will be appropriate, therefore, to follow for a distance this wonderful stream, which has ever increased in volume.

The fact of the gold discovery took a trip around the world. It left its impression upon the dweller of the Middle States, upon the resident of New England, upon the inhabitant of the Southern section. It crossed the ocean , toured Europe add visited various parts of the Orient.[2]

The effect of this journey was to lead hither men in various degrees of mental and moral development. Hence the

- -

[1] Bancroft, Hist. of California, VI, 22.
"It is the dawn of history in these parts." "All along the centuries California had lain slumbering, wrapped in obscurity, and lulled by the monotone of the ocean." But finally "came the awakening impelled by a ruder invasion of soldiers and land greedy backwoodsmen, the premonitory ripple of international interest and world absorbing excitement."

[2] Shaler, Hist. of U.S., I, 346.

attracted a greater part in the development of Coast communi-
ties than has been ordinarily assigned to it. Still, power
has been the stream of influence that [illegible] through the
door", opened by John Fremont, whose [illegible] the golden
key in the "beautiful west" of the [illegible] of January,
eighteen hundred and forty eight.[1]

It will be appropriate, therefore, to follow for a lim-
ited time this wonderful stream, which has ever increased in vol-
ume.

The foot of the gold discovery took upon upon the
world. It left its impression upon the dwellers of the United
States, upon the resident of New England, upon the residents
of the Southern section. It crossed the ocean, [illegible]
and visited various parts of the Orient.[2]

The effect of this journey was to lead [illegible] man in
various degrees of mental and moral development. Hence the

---

[1] Bancroft, Hist. of California, VI, 12.
"It is the dawn of History in those [illegible] "fill along
the centuries California had lain slumbering [illegible] in ob-
scurity, and hidden by the mantle of the [illegible]." But finally
"came the awakening impelled by a mighty [illegible] of soldiers
and land greedy backwoodsmen, the [illegible] of inter-
national interest and world commerce [illegible]."

[2] Shuler, Hist. of U.S., I, 26.

motley aspect of the population.[1]

A clearer idea of the population question will be gained if heed to a few statements in reference to it before the gold discovery is taken. What were the elements in the population of that time and what of its numerical strength? According to Mr. Bancroft, there were the Hispano-Californians, who controlled affairs in the south; while in the north men from the United States were in the ascendency. "These latter (i.e. U.S. men) are (1848) already nearly equal to the former, numbering somewhat over six thousand, while the Hispano-Californians may be placed at one thousand more. The ex-neophyte natives in and about the ranches and towns are estimated at from three thousand to four thousand, with twice as many among the gentile tribes. The new element classed as foreign before the conquest of eighteen hundred and forty six, had from one hundred and fifty in eighteen hundred and thirty grown slowly till eighteen

- -

1 "Humanity here is varied". This refers to California previous to 1848 but is just as applicable later. Bancroft, Hist of California, VI, 2.

"From Mexico, from Europe, from the Atlantic States, from South America and from China there came pouring into the port of San Francisco and down the western slope of the Sierras in wagons and on foot such a mixed and heterogeneous mass of energetic, daring and reckless men as had never before invaded any part of the continent." Cal. Agr. Society Report, 1888, p.449.

motley aspect of the population.[1]

A clearer idea of the population question will be gained if heed is a few statements in reference to it before the gold discovery in 1849. What were the elements in the population of that time and what of its numerical strength according to Bancroft, there were the Sonora-Californians, the controlled affairs in the south; while in the north men from the United States were in the ascendency. "There latter (Sept. 1 1848) were (1848) already nearly equal to the former, numbering some-thing over six thousand, while the Sonora-Californians may be placed at one thousand more. The ex-neophyte natives in and about the pueblos and towns are estimated at from three thou-and to four thousand, with twice as many among the wild tribes. The new element claimed as foreign before the conquest of eighteen hundred and forty six, had from the conquest and fifty in eighteen hundred and thirty, grown to a full eighteen

- -

[1] "Humanity here is varied". This [illegible] in California provious to 1848 but is just as applicable [illegible] Bancroft, Hist of California, VI, 2.

"From Mexico, from Europe, from the [illegible] States, from South America and from Oceania there came [illegible] into the port of San Francisco and down the western slope of the Sierras in wagons and on foot much a mixed and motley [illegible] mass of europeans, darling and rockies men as had never before invaded any part of the continent." Cal. Agr. Society Rep., 1888, p.440.

hundred and forty five; after which it took a bound assisted by over two thousand who came as soldiers in the regular and volunteer corps, not included in the muster rolls..... The first steady stream of immigrants is composed of stalwart, restless backwoodsmen from the western frontier of the United States; self reliant and of ready resource in building homes, even if less enterprising and broadly utilitarian than those who followed them from the eastern states."

Another element is the English representative, "burly of mind and body, full of animal energy, marked by aggressive stubbornness, tinctured with brusqueness and conceit."

In this list a place is given to the "omnipresent, quick witted" Celt, who is "more sympathetic and self adaptive than the arrogant and prejudiced Englishman or the coldly calculating Scot." And to the "easy going, plodding German, with his love of knowledge and deep solidity of mind."

Other component parts may be added to the number already mentioned, as for example, the Italians.[1]

It may assist to clearness, if the facts just stated are kept in mind, on passing across the line of "forty eight"

- -

[1] Bancroft, Hist. of Cal., VI, 3-4; Shaler, Hist. of U.S., I, 345.

hundred and forty five; after which it took a bound assisted by over two thousand who came as soldiers in the regular and volunteer corps, not included in the muster rolls..... The first steady stream of immigrants is composed of mariners, veterans backwoodsmen from the western frontier of the United States; self reliant and of ready resource in shifting times, over if less enterprising and broadly utilitarian than those who followed them from the eastern states."

Another element is the English representative, "burly of mind and body, full of animal energy, marked by impressive stubbornness, liberated with Puritanness and shrewd."

In this list a place is given to the "resolute and quick witted" Celt, who is "more sympathetic and self adaptive than the accurate and practical Saxon or the coldly calculating Scot." And to the "easy going, cheerful German, with his love of knowledge and deep solidity of mind.

Other component parts may be added to the "ready mechanical, as for example, the Italians."[1]

It may assist to clearness, if the terms just noted are kept in mind, on passing across the line of "forty eight

- -

*Bancroft, Hist. of Const., VI, 3-4; Schurz, Hist. of U.S., I, 365.

into "forty nine".

The immediate effect of the discovery incident on California was abandonment of farms, closing of stores and setting off every man to the gold field.[1] But the ten thousand gold seekers of early "forty nine" increased to more than one hunderd thousand by the close of "forty nine".

This fact raised California from an insignificant colony into a busy and thriving Commonwealth; and lifted her metropolis from a hamlet to a commercial center. As a consequence of these circumstances, the period of probation,[2] common to all territories before admission to statehood, was obviated. California became a state of the Union the next year.

From the preceding paragraphs it becomes clear that the discovery of gold was not only the beginning of the early mining era of the Pacific Coast, but it also was the direct influence that increased the population to more than one hundred thousand souls, from a number less than fifteen thousand or twenty thousand perhaps.

A pertinent question at this point is, What was the character of the majority of this one hundred thousand? One

- -

[1] Bancroft, Hist. of Cal., VI, ;
Shaler, Hist. of U.S., I, 346.
[2] Shaler, Hist. of U.S., I, 346.

into "forty nine".

The immediate effect of the discovery incident on California was commencement of frenzy, stealing of slaves and setting off every man in the gold fields.[1] [illegible] gold seekers of early "forty nine" [illegible] one hundred thousand by the close of "[illegible]".

This fact caused California [illegible] colony into a busy and thriving [illegible] metropolis from a [illegible] quence of these circumstances [illegible] mus to all territories [illegible] viator. California [illegible] [illegible] state.

From the foregoing [illegible] the discovery of gold [illegible] mining are of the [illegible] influence since increased [illegible] dred thousand souls, from a number [illegible] or twenty thousand persons.

A continent [illegible] character of the majority [illegible]

---

[1] Bancroft, Hist. of [illegible]
Shelley, Hist. of [illegible]
Shelley, Hist. of [illegible], 1880.

author says, "it is probable that no better class of immigrants was ever assembled on these western shores, than that which consisted the California pioneers. The very poor were deterred by the distance and the cost of the journey; the indolent and timid, the aged and infirm, by its hardships; nor for such did the life in the far west, its privations and vicissitudes, present any stronger attraction. From all the nationalities came their chosen manhood".[1] "Not the least noticeable features" of this group of new arrivals "were the youthfulness and vigor, the energy, fortitude, and manly self reliance of its members"[2]. The majority were "full of latent vivacity; of strong intellect, here quickening under electric air and new environment; high strung, attenuated, grave, shrewd, and practical and with impressive positiveness."[3]

Here the query, What has the gold discovery in connection with the manufacturing industries of the Coast? may present itself. There is a very important connection. On the one hand, the situation of "forty eight" and the years immediately following made manufacturing impossible.[4] On the

-) - -

[1] Shaler, Hist. of U.S., I, 346-347.

[2] Ibid.

[3] Bancroft, Hist. of Cal., VI, 3.

[4] This I shall attempt to show in a subsequent paragra p

author says, "It is possible that no better class of immigrants was ever assembled on these western shores, than that which constituted the California pioneers. The very poor were deterred by the distance and the cost of the journey; the indolent and timid, the aged and infirm, by its hardships; nor for much did the life in the far west, its privations and vicissitudes, present any stronger attractions. From all the nationalities came their chosen numbers".[1] "And the least noticeable features" of this group of "adventurers" were the youthfulness and vigor, the courage, fortitude, and manly self reliance of its members".[2] The majority were "full of instant vivacity; of strong intellect, keen, inventive, under alacrity air and rare endurance, high energy, enterprise, prowess, address, and practical and all impressive qualitiesa."[3]

Here the query, What was the old discovery in connection with the manufacturing industries of California? may present itself. There is a very important connection. On the one hand, the situation of "every, or, rather" the people immediately following such manufacturing in regard to the

---

[1] Chapter, Hist. of C., I, 340-347.

[2] Ibid.

[3] Bancroft, Hist. of Cal., VI, 6.

[4] This I shall attempt to show in a succeeding paragraph.

other hand, however, the very phase of the Coast industries in question has its origin here. How? By giving to the Coast, the necessary personal element. This is the most important factor in the successful building up of all such enterprises.

To this era is due the credit of attracting to this Coast a sufficient number of men, who knew how to adapt themselves to their environment, and who knew also how to make that environment minister to their wants and needs. It drew here those who could manufacture, the American from the East and middle west; the Englishmen, from a manufacturing country. These, with the German, had far more to do with the beginning and carrying on of Pacific Coast manufactures than at first sight appears.

We have had pointed out to us recently, the unfavorable environment for manufactures in Mexico; and in addition a more important fact of the unfitness for and the indifferent disposition of the people themselves to manufacturing enterprises.[1] It is true that the necessary qualifications for manufacturing were possessed by some of the Coast's inhabitants prior to the great rush for gold, but there was not a

- -

[1] Sheldon, Industrial Development of Mexico; San Francisco Chronicle, December 30, 1894.

other hand, however, the very curse of the Coast industries in question has its origin here. Not by living in the Coast, the necessary personal element. This is the most important factor in the successful building up of any such enterprise.

To this are in due the credit of attracting to this Coast a sufficient number of men, who have not yet adjusted themselves to their environment, and who have yet to make that environment minister to their wants and needs. It drew here those who could manufacture, the artisan from the east and middle west; the engineer, from a manufacturing country. These, with the farmer, had far more to do with the founding and carrying on of Pacific Coast manufactures than at first sight appears.

We have had pointed out to us recently, the unfavorable environment for manufactures in Russia; and in addition a more important fact of the unfitness for and the indifferent disposition of the people themselves to work at organized enterprises.[1] It is true that the necessary qualifications for manufacturing were possessed by some of the Coast's inhabitants prior to the great rush for gold, but there was not a

---

[1] Sheldon, Industrial Development of Russia; see Transcript Chronicle, December 31, 1924.

sufficient number to carry on extensive undertakings.[1] But had the immigration to the Coast continued at the same rate of increase as previous to the discovery. I am inclined to think that California, Oregon and Washington would scarcely be worthy of notice, so far as this side of their development is concerned. Surely progress under present conditions is slow enough.[2]

Having now given some account of the most important element contributed by the mining era of the Pacific Coast, and which made manufacturing subsequently possible, we come next to note the condition which made manufacturing temporarily impossible .

- -

[1] "At one breath, gold cleared a wilderness and transplanted thither the politics and institutions of the most advanced civilization in the world." Bancroft, Hist. of Cal., VI, 426.

[2] There is an interesting contrast in the manner of immigration before and after "forty eight". Preceding '48, it was done "quietly with deferential air, they drop in asking hospitality; first as way-worn stragglers, from trapping expeditions, or as deserting sailors from vessels prowling along the coast in quest of trade or secrets. The compact bands of restless, frontier settlers slip over the border, followed by the firmer tread of determined pioneers, who wait for strength and opportunity. Bancroft, Hist. of Cal., VI, 2.

After '48 we get a glimpse by noting the fact that within twelve months more than one thousand vessels entered San Francisco port. Immigration was sudden, lively, rushing. Shaler, Hist. of U.S. I, 346.

sufficient number to carry on extensive undertakings.[1] Not had the immigration to the Coast continued at the same rate of increase as previous to the discovery. I am inclined to think that California, Oregon and Washington would scarcely be worthy of notice, so far as this side of their development is concerned. Surely progress under [illegible] conditions is slow enough.[2]

Having now given some account of the most important element contributed by the mining era of the Pacific Coast, and which made manufacturing only partly possible, we come next to note the condition which made manufacturing temporarily possible in .

- -

[1] "At one breath, gold cleared a wilderness and transplanted thither the politics and institutions of the most advanced civilization in the world." Bancroft, "Cal. of '49", VI, 422.

[2] There is an interesting contrast in the manner of immigration before and after "forty-eight". Preceding '48, it was done "mainly with determined [illegible] in defying hospitality; fares on any-worn [illegible] exploitions, or in [illegible] along the coast in quest of [illegible] bands of [illegible] followed by the finer [illegible] who wait for strength and opportunity. [illegible] Bancroft, "Cal. of '49", VI, 2.

After '49 we get a glimpse of [illegible] within twelve months more than one [illegible] San Francisco port. Immigration was [illegible] shaler, list. of U.S. I, 266.

An examination of the prices of the period will sufficiently indicate the situation.

In eighteen hundred and forty nine, and fifty common labor commanded from eight to ten dollars a day. Mechanical labor, however, demanded much more. Could any one afford to engage in manufacturing? This is not all. No. Through the whole period in mind the situation remained the same. "There were few articles of general consumption that could not be imported for the merest fraction of what would then be the cost of local production. All that man needed for daily use was imported by sea, from the miner's shovel to the ready made storehouse of the merchant. In March "forty eight" flour was selling in San Francisco at five dollars per hundred weight; a month or two later, at fifteen dollars, while later still, in some of the mining camps it sold for two hundred dollars and more. In the winter of "forty nine" a pair of blankets or boots in Coloma were worth from sixty to seventy dollars; on the north fork of the American river, where were some of the richer placers, five dollars a pound was the usual price of provisions, and at the southern mines a bottle of liquor could not be had for less than twenty dollars. At many points there were no established rates, goods of whatever description selling at whatever the conscience of the shopkeeper permit-

An examination of the prices of the period will sufficiently indicate the situation.

In eighteen hundred and forty-one, one fifty common labor commanded from eight to ten dollars a day. Mechanical labor, however, demanded much more. Could any one afford to engage in manufacturing? Why is not all. No. Through the whole period in mind the situation remained the same. There were few articles of general consumption that could not be imported for the mere freight or what would only be the cost of local production. All that was needed for daily use was imported by sea, from the miner's shovel to the ready made storehouse of the merchant. In 1849 "forty niner" labor was selling in San Francisco at five dollars per [illegible] day; a month or two later, at fifteen dollars, while later still, in some of the mining camps it sold for ten times [illegible] and more. In the winter of "forty nine" a pair of blankets or boots in Oregon were worth from sixty to twenty dollars; on the north fork of the American river, where were some of the richest placers, five dollars a pound was the usual price of provisions, and at the southern mines a bottle of liquor could not be had for less than twenty dollars. At many points there were no established rates, going of whatever determining selling at whatever the consciences of the shopkeeper permit-

ted him to charge."[1]

Fortunate, however, for the Pacific Coast this intensified condition did not long continue. For several years it is true the mines gave agenerous yield to the labors of the gold digger. In "forty nine", forty millions of dollars were obtained; but the maximum yield of sixty five millions of dollars was reached in eighteen hundred and fifty three.[2]

Thence began the decline. The great period of inflation was gone and with it went many a valuable cargo of goods, which clearly indicated a "woful lack of business judgment." Thus departed the great era that initiated California into the mysteries of the Union, and which gave rise to those industries upon which the coast must and has since depended. "The good old days of"forty nine" were gone" never more to return.

We turn now to agriculture, the hand maid of manufacturing. Necessity gave rise to this great branch of the Coast's industries.[3]

- -

[1] Shaler, Hist. of U.S. I, 348.

[2] Ibid.

[3] "Modern agriculture, as we know it on this coast today was born of the necessity of those early years." - Transactions of Cal. St. Agri. Soc., 1881, p 27.

ted him to change."[1]

Fortunate, however, for the Pacific Coast this improvised condition did not long continue. For several years it is true the mines gave enormous yield for the labors of the gold diggers. In "forty nine", forty millions of dollars were obtained; but the maximum yield of nearly five millions of dollars was reached in eighteen hundred and fifty three."[2]

Thence began the decline. The great period of inflation was gone and with it went many valuable cargo of goods, which clearly indicated a "total lack of business judgment." Thus departed the great era that initiated California into the mysteries of the Union, and which gave rise to [illegible] industries upon which the coast must and has since depended. "The good old days of "forty nine" were gone." never more to return.

In turn now to agriculture, the head rest of manufacturing. Necessity gave rise to this great branch of the Coast's industries.[3]

- -

1 Shaler, Hist. of U.S., I, 340.

2 Ibid.

3 "Modern agriculture, as we know it on this coast today was born of the necessity of those early years." - Transactions of Cal. St. Agri. Soc., 1901, p 37.

The falling off in the yield of the mines compelled men to seek other fields of labor. They must live and many of those who were possessed of sufficient foresight concluded that they could do as well here as elsewhere. Consequently they turned to the valley, and began to plant and cultivate. The extent to which this has been carried will appear from a few historical statements.

In eighteen hundred and fifty three, the year of the greatest annual product of the mines, agriculture was still in "swaddling clothes."[1] But slowly and surely agriculture became so large that it had to lay aside its once necessary dress and don that belonging to a higher station. Thus implying that it had grown to sufficient size to be able to satisfy the wants and needs of the Coast population. Grain and stockraising were the principal elements of the earlier period.[2] But later, cultivation of fruits of all varieties assumed an important place.[3]

A few figures will give a clearer idea of the growth of agriculture. Take wheat. In eighteen hundred and seventy seven and seventy eight, California alone had one million

- -

[1] Scientific American, December 26, 1891.

[2] Shaler, Hist. of U.S., I, 349.

[3] Internal Commerce Report, 1890, p 295.

The falling off in the yield of the mines compelled men to seek other fields of labor. They must live and many of those who were possessed of sufficient foresight concluded that they could do as well here as elsewhere. Consequently they turned to the valley, and began to plant and cultivate. The extent to which this has been carried will appear from a few historical statements.

In eighteen hundred and fifty three, the year of the greatest mineral product of the mines, agriculture was still in "swaddling clothes."[1] But slowly and surely agriculture became so large that it had to lay aside its home-spun dress and don that belonging to a higher station. Thus implying that it had grown to sufficient size to be able to satisfy the wants and needs of the Coast population. Grain and stockraising were the principal elements of the earlier period.[2] But later, cultivation of fruits also [illegible] assumed an important place.[3]

A few figures will give a clearer idea of the growth of agriculture. Take wheat. In eighteen [illegible] and seventy seven and seventy eight, California [illegible] million

---

[1] Scientific American, December [illegible], 1853.

[2] Shaler, Hist. of U.S., I, [illegible]

[3] Internal Commerce Report, [illegible], p. 302.

EIGHT HUNDRED THOUSANd wheat acreage, yielding sixteen million centals; in eighteen hundred and ninety and ninety one, three million acres were sown to wheat, producing thirty million cantals. This shows an increase of more than fifty per cent in thirteen years. The price of the same at tide water in eighteen hundred and eight was one dollar and seventy cents; in eighteen hundred and ninety one, it was two dollars two and one-half cents.

As to other grains, the barley product was one fourth of the entire supply of the Union.[1]

Taking a somewhat broader view we learn from the census reports that California, Oregon and Washington had in eighteen hundred and fifty, two thousand and thirty six farms, cultivating one hundred and sixty five thousand three hundred and eleven acres.[2] In eighteen hundred and sixty, twenty five thousand eight hundred and fifty two farms tilled two million four hundred and forty six thousand acres.[3] In eighteen hundred and seventy, thirty four thousand four hundred and thirty eight farms cultivated seven million

- -

[1] Scientific American, April 2, 1892, p. 213.

[2] Census Report, 1860. 'Agriculture'.

[3] Ibid.

EIGHT HUNDRED THOUSAND wheat acreage, yielding sixteen million bushels; in eighteen hundred and ninety one ninety one, three million acres were sown to wheat, producing thirty million bushels. This shows an increase of more than fifty per cent in thirteen years. The price of the same staple water in eighteen hundred and eight was one dollar and seventy cents; in eighteen hundred and ninety one, it was two dollars two and one-half cents.

As to other grains, the barley product was one fourth of the entire supply of the Union.[1]

Taking a somewhat broader view we learn from the census reports that California, Oregon and Washington had in eighteen hundred and fifty, two thousand one hundred and farms, cultivating one hundred and sixty five thousand three hundred and eleven acres.[2] In eighteen hundred and eighty, twenty five thousand eight hundred and fifty [illegible] filled two million four hundred and forty six [illegible] acres.[3] In eighteen hundred and seventy, [illegible] four hundred and thirty eight farms cultivating [illegible] million

---

[1] Scientific American, April 2, [illegible] 13.

[2] Census Report, 1850. Agriculture [illegible]

[3] Ibid.

five hundred and twenty six thousand four hundred and twenty nine acres.[1] In eighteen hundred and eighty, fifty eight thousand six hundred and eighty farms included twenty two million two hundred and seventeen thousand eight hundred and seventy five acres.[2] These figures give us the growth of agriculture.

A few words by way of summary from the conclusion of this chapter.

"The American conquest of California made an industrial revolution on the Pacific Coast, unparalleled in its completeness, its suddenness and its wide-reaching influences.

- -

[1] Census Report, 187 0. 'Wealth and Industry.

[2] Census Report, 1880. This is the latest report giving figures desired. The following table presents this matter in these figures:

Number of Farms.

State	1850	1860	1870	1880
Cal.	872	18,716	23,724	35,934
Oregon	1164	5,806	7,587	16,217
Wash.	---	1,330	3,127	6,529
Total	2,036	25,852	34,438	58,680

Number of Acres under Cultivation.

State	1850	1860	1870	1880.
Cal.	32,454	2,468,034	6,218,133	16,593,742
Oregon	133,857	896,414	1,116,290	4,214,712
Wash.	---	81,869	192,016	1,409,421
Total	165,311	2,446,317	7,526,429	22,217,875.

five hundred and twenty six thousand four hundred and twenty nine acres.[1] In eighteen hundred and eighty, fifty eight thousand six hundred and eighty farms included twenty two million two hundred and seventeen thousand eight hundred and seventy five acres.[2] These figures give us the growth of agriculture.

A few words by way of summary from the conclusion of this chapter.

"The American conquest of California made an industrial revolution on the Pacific coast, symbolized by its sawplatforms, its sandbanks and its wide-reaching railroads.

- -

[1] Census Report, 1870 G. 'Acres and Industry'.

[2] Census Report, 1880. This is the latest report giving figures desired. The following table summarizes the matter in these figures:

Number of Farms.

State	1850	1860	1870	1880
Cal.	272	12,712	23,722	[illegible]
Oregon	1104	6,000	7,000	[illegible]
Wash.	---	1,250	2,127	[illegible]
Total	2,252	22,227	34,[illegible]	[illegible]

Number of Acres under Public Land.

State	1850	1860	1870	1880
Cal.	32,404	2,402,024	6,312,123	[illegible]
Oregon	123,027	322,414	1,110,[illegible]	[illegible]
Wash.	---	21,[illegible]	[illegible]	[illegible]
Total	155,322	2,746,217	7,[illegible]	[illegible]

The number of English, German, American and French residents rapidly increased, the European becoming speedily Americans in their sympathies and modes of working... and in one year three times as many men as the entire previous white population of the Territory rushed to it by land and sea... Year after year the throng continued to pour in. For five years the average washing of the industrious miner amounted to twelve dollars a day and frequently rose to forty dollars without any apprenticeship or special skill. This high pay left little chance for profit on local agricultural products or manufactures. Such articles could be obtained in abundance at less expense, from other countries. There were few farms and no factories. All the clothing and tools, most of the provisions and lumber and even ready made houses were imported. The two almost exclusive occupations of the people north of the latitude of Monterey were mining and trading.[1]

But the five years[2] constituting this important period drew from other sections the necessary personal element by the magnetic force in gold. Not long was the fact that

- -

[1] Hittell, Pac. Coast Conn. and Judus, 48.

[2] 1848 - 1853.

The number of English, German, American and French residents rapidly increased, the Europeans becoming especially Americans in their appetites and modes of working... and in one year three times as many as the entire previous white population of the Territory rushed to it by land and sea... Year after year the strong continued to pour in. For five years the average wealth of the inhabitants amounted to twelve dollars a day and frequently rose to forty dollars without any apparentlously or special skill. This high pay left little chance for profit on local agricultural products or manufactures. Such articles could be obtained in abundance at less expense, from other countries. There were few farms and no factories. All the clothing and tools, most of the provisions and lumber and even ready made houses were imported. The low wheat exporting conditions of the people until of the Islands of Samoa were mining and trading.[1]

But the five years' consistuting this interval period grew from other sections the necessary revenue by the magnetic force in gold. Not long, was the last that

---

[1] Mittell, Jos. Ocean Gem, and Samoa, 1

[2] 1849 - 1853.

prosperity was safer and surer down in the rich valleys than in the high places in search for the yellow substance,[1] hidden from the new population of the coast. Out of these has come the third great industry of the Pacific Coast, namely Manufacturing.

- -

[1] Scientific American, December 26, 1891. - See Overland Monthly, Vol. II, p. 280 ff.

prosperity was safer and surer down in the rich valleys than in the high places in search for the yellow substance, hidden from the new population of the coast. Out of these has come the third great industry of the Pacific Coast, namely Manufacturing.

- -

[1] Scientific American, December 20, 1913. - See Overland Monthly, Vol. XI, p. 380 ff.

Chapter II.

SELECTED INDUSTRIES.

Having considered in part the conditions that gave rise to the manufacturing industries of the Pacific Coast, we, come now to examine certain of these industries, which are regarded as representative, and as possessing great possibilities and importance for the future.

1. Woolen Industry.

One of the earliest founded branches[1] of Pacific Coast industry is the manufacture of woolen fabrics. Since sheep husbandry forms one element in the basis of this business and which also gave great encouragement to this line of manufacturing, we may state in a few paragraphs the situation of this aspect of our subject.

The rearing of sheep and the production of wool has witnessed many fluctuations during the forty five years that have elapsed since the Americans began to devote their

- -

[1] Cronise, Wealth of Cal., 602.

Chapter II.

SELECTED INDUSTRIES.

Having considered in part the conditions that give rise to the manufacturing industries of the Pacific Coast, we, come now to examine certain of these industries, which are regarded as representative, and as possessing great possibilities and importance for the future.

I. Woolen Industry.

One of the earliest founded branches[1] of Pacific Coast industry is the manufacture of woolen fabrics. Since sheep husbandry forms one element in the basis of its existence and which also gave great encouragement to this line of manufacturing, we may stop for a few moments upon the attention of this aspect of our subject.

The rearing of sheep and the production of wool has witnessed many fluctuations during the forty five years that have elapsed since the Americans began to devote their

- -

[1] Cronise, Resume of Cal., 177.

attention to it.

During the prosperous period of the Missions many sheep were raised. But abandonment of the Missions caused severe suffering to this industry. Even more than either the horse or cattle branch of live stock raising. These could be turned loose, and would care for themselves. But sheep must have a guardian to protect them. Wild beasts attacked the flocks and soon the sheep would scatter and be destroyed.

Hence when the American occupation set in, very few of the vast herds once belonging to the Missions, were left. Those that still remained had degenerated into a gaunt long legged, half wild sort of beast, which produced little wool.

But not until the American had engaged in the sheep industry did the product of wool become important. The first considerable clip recorded after the occupation was in eighteen hundred and fifty four. The amount that year was one hundred and seventy five thousand pounds.

From that time onward the number of sheep as well as the output of wool steadily increased to eighteen hundred and seventy six, in which year the amount of wool production was fifty six millions five and fifty thousand pounds.

attention to it.

During the prosperous period of the mission many sheep were raised. But abandonment of the mission's animal severe suffering to this industry. Wild cattle, the horse or native breed of live stock roaming. These could be turned loose, and would care for themselves. But sheep must have a question to protect them. Wild beasts attacked the flocks and soon the sheep would scatter and be destroyed.

Hence when the American occupation took place, very few of the vast herds once belonging to the Missions, were left. Those that still remained had degenerated into a great long legged, half wild sort of beast, which produced little wool.

But not until the American Mill engaged in the sheep industry did the product of wool become important. The first considerable ship recorded after the occupation was in eighteen hundred and fifty four. The [illegible] that year was one hundred and seventy five thousand [illegible] pounds.

From that time onward the number of sheep as well as the output of wool steadily increased. In eighteen hundred and seventy six, in which year the [illegible] of wool production was fifty six millions five [illegible] fifty thousand pounds.

To this date, however, the owners of sheep enjoyed special advantages. The greater portion of the Sacramento and San Joaquin valleys was unsettled and unfenced; while in the southern counties millions of acres were in the same condition. Most of this land produced good crops of natural grass, upon which the sheep throve. When the feed grew short in one place the flocks could be easily driven to another. The important point is that abundance of feed was always at hand.

During this halcyon period of vast fortune making in the sheep business, it was frequently the case that the sheep owners did not possess the title to a single acre, used for pasturage. Where rent was paid it was merely nominal, only a cent or two per acre.

In eighteen hundred and seventy six the conditions began to change. The railroad was extended through the valleys, thus opening them to settlement. The advent of the homesteader and the pre-empter marks the beginning of the end of sheep ranging on free and open land. From that year the amount in the production of wool grew less and less.[1] Consequently we have this situation, that from fifty six

- -

[1] The decrease in each year's clip serves as a pretty certain indication in the progress of settlement.

To this date, however, the owners of sheep enjoyed special advantages. The greater portion of the Sacramento and San Joaquin valleys are unsettled and uncleared; while in the southern counties, fallows of course were in the same condition. Most of this land produces good crops of natural grass, upon which the sheep graze. Then the feed grows short in one place the flocks could be easily driven to another. The important point is that a supply of feed was always at hand.

During this golden period of that fortune making in the sheep business, it was frequently the case that the sheep owners did not possess an inch of land, used for pasturage. There was no call for it, merely nominal, only a cent or two per acre.

In eighteen hundred and seventy-six the conditions began to change. The railroad was extended through the valleys, thus opening them to settlement. The event of the homesteaders and the [illegible] beginning of the end of sheep raising on free land occurred. Since that year the amount in the production of wool has been [illegible]. Consequently we have this situation, that [illegible] six

- -

The decrease in wool year's city covers as a pretty certain indication in the progress of settlement.

millions in eighteen hundred and seventy six there was a gradual decrease to thirty one millions pounds in eighteen hundred and eighty seven. But here the turning point came into view, and increase is perceptible.[1] This fact is

---

1.

year	pounds	year	pounds
1854	175,000	1875	43,532,223
1855	300,000	1876	56,550,973
1856	600,000	1877	53,110,742
1857	1,110,000	1878	40,862,091
1858	1,428,000	1879	46,903,360
1859	2,378,000	1880	46,074,154
1860	3,055,327	1881	42,076,639
1861	3,721,998	1882	40,529,119
1862	5,990.300	1883	40,848,690
1863	6,268,480	1884	37,415,330
1864	7,923,670	1885	36,561,390
1865	8,949,931	1886	38,509,160
1866	8,532,047	1887	31,564,231
1867	10,288,600	1888	32,569,972
1868	14,232,687	1889	36,760,180
1869	15,413,970	1890	34,854,000
1870	20,072,660	1894	33,000,000
1871	22,187,188	1895	32,000,000
1872	24,255,468		
1873	32,155,169		
1874	39,351,301		

Internal Commerce Report, 1890, p.333. The amount for 1890 and 1894 were obtained from different sources.

[illegible] in [illegible] Canada. [illegible] [illegible] [illegible]

largely due to improved methods of caring for sheep.[1]

The breaking up of the great range has produced an opposite effect to that anticipated by those who were connected with it. The best grades have been introduced, so that the business, to the extent of this phase, has been placed on a firm basis of prosperity.[2] Such is in outline the production of wool in California. In Oregon, however, as it is today this branch of live stock raising constitutes one of the great staples in product. Still its history is similar to that of California.[3] Nothing was done of any note

- -

[1] The effect of these methods are seen in the following statements. Careful husbandry has supplanted nomadic practices. The annual clip in U.S. has, therefore, increased three fold in last 30 years. In Australia, ten fold. In South America nine fold. In British possessions of South Africa the increase has been five fold. This outside wool hasforced down the price of the best American wool. No tariff has or can stay this cause and effect. From within the influence is exerted by the clips of nomadic flocks west of Miss. River because the owners of sheep pay little or no rental. California has not been able to hold her own against this competition and her clip has gradually fallen from 56,550,000 pounds in 1876 to 33,000,000 pounds today. (Jan. 26, 1894) At about this amount it has stood for the last seven years. Wool and Manufacture, 1894, p 6.

[2] San Francisco Chronicle, January 1, 1892.

[3] 1860 Oregon produced 200,000 pounds of wool.
1870 " " 1,500,000 " " "
1880 More than eight millions pounds were exported.
Bancroft, Hist. of Cal., VII, 59 - 61. International Commerce Report, p. 829-33.

largely due to improved methods of cutting for chop.[1]

The breaking up of the great trusts has produced an opposite effect to that anticipated by those who were connected with it. The best proofs have been introduced, so that the business, to the extent of this case, has been placed on a firm basis of prosperity. And is in outline the production of wool in California. In Oregon, however, as it is today this branch of live stock is also constituting one of the great staples in production. Their industry is similar to that of California.[2] Holding the more of any note

- -

[1] The effect of these methods are seen in the following statements. Quoted industry has supplanted sporadic practices. The annual sale in U.S. has increased three fold in last 30 years. In Australia, the 5 fold. In South America nine fold. In British possessions of South Africa the increase has been five fold. This greatly lowered down the price of the best American wool. In different or can also this same and effect. Some within the influence is exerted by the chaps of northern Italian west of Alps. Silver becomes the owners of sheep pay little or no rental. California has not been able to hold some own against this competition and her city has probably fallen from 26,350,000 pounds in 1890 to 7,[illegible] today. (Ten. 26, 1924). At about this amount it has stood for the last seven years. Wool and Manufactures. 1924. p.[illegible]

[2] San Francisco Chronicle, January 1, 1924.

[3] 1920 Oregon produced 500,000 pounds of wool.
1920 " 1,500,000
1920 Idaho with eight million pounds exported.
Bancroft, Hist. of Calif., VII, 81 - 7. International Commerce Report, p. 320-23.

until the Americans took hold of the business. Washington seems to have had more favorable circumstances under which to begin this phase of her stock raising.[1]

b. Woolen Mills.

In the section just preceding the condition of the source from which the Pacific Coast draws its raw material in woolen manufacture is stated. We now turn to the making of this into fabrics.

The first textile fabrics made in California, or on the coast as to that, were the coarse rough blankets, at the missions. These took the place of the scanty fibre weft of the unconverted Indians. For nearly fifty years, while the missions were prosperous under the dominion of Spain and the management of the Franciscan Friars, wool was thus utilized. But on the fall of these institutions this manufacture disappeared.[2]

However, the first mill established for making woolen fabrics is due to Mormon enterprise. In Utah, then, Pacific

- -

[1] Internal Commerce Report, p 995. The accompaning table shows the amounts of wool produced.

1865	83 83,326	1887	2,230,415
1875	396,567	1888	4,760,314
1880	2,117,064	1889	4,513,267
1885	6,402,563	1890	4,389,480.
1886	5,938,220		

until the Americans took hold of the business. Washington seems to have had more favorable circumstances under which to begin this phase of her national growth.[1]

b. Woolen Mills.

In the section just preceding the condition of the source from which the Pacific Coast drew its raw material in woolen manufacture is stated. Reference was made to the making of this into fabrics.

The first textile factory made in Oregon, or on the coast as to that, were the Oregon Woolen Manufacturing, at the missions. These took the place of the poorly fitted wefts of the unconverted Indians. For nearly fifty years, while the missions were prosperous under the direction of Spain and the management of the Jesuits, good cloth was thus utilized. But on the fall of these institutions the Indian manufacture disappeared.[2]

However, the first mill established for making woolen fabrics is due to Norman Wilcox. In 1858, then, Wadhills

- -

[1] Internal Commerce Rep. [illegible] 1904. The accompanying table shows the remarkable [illegible] of wool [illegible] used.

1860	10,[illegible]	[illegible]	[illegible]
1870	300,000	[illegible]	[illegible]
1880	2,117,000	[illegible]	[illegible]
1890	6,402,000	[illegible]	[illegible]
1899	5,[illegible]	[illegible]	[illegible]

Coast manufactures take their beginning. There they had a good supply of skilful and steady laborers. Being protected also by the great cost of exporting wool and importing clothing over one thousand miles of wagon road, the Mormons built a mill at West Jordan in eighteen hundred and fifty three.[1]

But for the first ventures in woolen manufacturing in the three states here in mind we must go to Oregon. The first steps in this direction were taken in eighteen hundred and fifty four, when a carding machine was erected at Albany. In the early spring of the next year machinery was erected in Polk county for spinning, weaving, dyeing and dressing woolen cloths. It was not, however, until April, eighteen hundred and fifty six that an association was formed at Salem for the purpose of erecting a woolen manufactory.

- -

[2] page 21. San Francisco Chronicle, Jan. 1, 1892, p 5. Bancroft, Hist. of Cal., VII, 88.

[1] It is worthy to note, however, that Utah had one establishment in 1860; with 70 spindles; 3 in 1870, with 1020 spindles; one in 1880 with 432 spindles. The number of looms in 1870 was 11; in 1880, 14. The number of employees in 1860 was 7; in 1870, 16; in 1880, 29. They were as regards sex;

Male	1860	1870	1880
Males	4	10	16
Females	3	2	8
Youths and Children.	-	4	5

Census Report, 1880.

Coast manufactures take their beginning. There they had a good supply of skilful and steady labour. Being protected also by the great cost of expediting and importing clothing over one thousand miles of [illegible], for the one quite a million West Jordan in eighteen [illegible] and fifty three.[1]

But for the first venture in woolen manufacturing in the three states here in mind we need go to Oregon. The first step in this direction were taken in eighteen hundred and fifty four, when a woolen factory was started at Albany. In the early spring of the next year machinery was created in York country for spinning, weaving, dyeing and dressing woolen cloths. It was not, however, until April, eighteen hundred and fifty six that a conversation was formed at Salem for the purpose of creating a woolen manufactory.

- -

[1] Page 21. Sam Francisco Directory, Jan. 1, 1870, p 5. Bancroft, Nist. of Cal., VII, 9.

[1] It is worthy to note, however, that [illegible] had one established in 1860, with 70 employes; [illegible] in 1870, with 1020 spindles; one in 1880 with [illegible] spindles. The number of looms in 1870 was 11; in 1880, 14. The number employed in 1880 was 7; in 1870, 16; in 1880, 20. The [illegible] for Oregon was;

	Male 1880	1870	1880
Males	4	1	[illegible]
Females	2	2	2
Youths and Children.	-	4	2

Census Reports; 1880.

This was known as the Willamette Woolen Mills[1] and was the first mill of any importance of the Pacific Coast. Other mills were, from time to time, founded. But many have been forced to abandon further operation.

- -

[1] The Willamette Mills began operation in 1857 with two sets of woolen machinery. The prime mover of this enterprise was James Watt. William Rector, superintendent of construction, was sent East to purchase the requisite machinery. The company purchased the right of way to bring the water of the Santiam River to Salem. This they did by means of a canal, which makes this spot one of the best water powers on the Pacific Coast. In the last months of the year the factory was ready for business and the completion was celebrated by the firing of a cannon. $75,000 was thus invested. For some time the mill returned little or no profit. It was, however, a subject of much ridicule on the part of the surrounding community and a source of vexation to the stockholders. But perseverance and skilful management made the enterprise a success in a few years. Then the company's stock rose from a heavy discount to 1100 per cent premium. In 1860 the capacity of the mills was doubled, but after several years more of prosperity the mills burned to the ground in May, 1876. Hittell, Commerce and Industries, 445. Bancroft, Hist. of Oregon, I; II, 338, 731-732. The goods manufactured were flannels, blankets and cassimeres. Other important mills were established at Oregon City in 1864; at Brownsville in 1875, still others, but of minor importance at Ashland, and Dayton in 1872. How many mills in Oregon today I cannot say. The only report accessible is the 18th Report of Chamber of Commerce of Portland. This is for 1892 and gives the following.

	Employees	Product value.
1890	360	$880,000
1891	397	$ 885,000
1892	395	$880,000.

This was known as the Willamette Woolen Mills and was the first mill of any importance on the Pacific Coast. Other mills were, from time to time, founded. But many have been forced to abandon further operation.

- -

[1] The Willamette Mills began operation in 1857 with two sets of woolen machinery. The mills were one of the enterprises of Thomas Cornell. Willis Tucker, superintendent of construction, was sent East to purchase the machinery. The company purchased the mills of Ang to power the water of the Santiam River in Salem. The dam was built by means of a cribwork, which makes that part of the coast-[illegible] on the Pacific Coast. In the last months of [illegible] the factory was ready for business [illegible] was [illegible] by the finding of a manager. [illegible] investment. For some time the mill returned little [illegible]. It was, however, a subject of much [illegible] of the surrounding community and a source of [illegible] to the stockholders. But perseverance [illegible] made the enterprise a success in [illegible]. Then the [illegible] stock from a heavy discount to [illegible] premium. In 1860 the capacity of the mills [illegible], and within several years more of property [illegible] to the ground in May, 1873. Initially, [illegible] Benedict, Flint, of Oregon, [illegible]. The goods manufactured were flannels, [illegible]. Other important mills were established [illegible] in 1864; at Portsmouth in 1878, with other [illegible] of Albany (Oregon) and Salem, and Salem in 1877. [illegible] mills in Oregon today I cannot say. The only [illegible] available is the 16th Report of Chamber of Commerce [illegible]. This is for 1890 and gives the following:

	Employees	Capital
1890	360	[illegible]
1891	327	600,000
1892	308	600,000

Chronologically, California comes next. In eighteen hundred and fifty eight the first California mill was built. This was a time when industrial skill was scarce and extravagantly high, when raw material was of an inferior quality; when money was loaned at exorbitant interest. In a word the manufacturer had to struggle against all the difficulties incident to starting a new industry.

In 1861 it became evident that the armies drawn from the productive industries of the nation had to be clothed and equipped; Eastern cities were enlarging old mills and building new ones. These were hurried into operation. Every card and spindle and loom was taxed to its utmost capacity. During this period the Pacific Coast woolen mills began to reap the benefits which the energy and sorely taxed patience of their promoters so well deserved.[1]

The first woolen mill was the Pioneer. The census, however, of eighteen hundred and eighty enumerates nine mills. But since then the number of mills and their production have increased. These mills consumed a little more than one-fifth of the wool product, but conditions are changing. Not many

- -

[1] Hittell, Pac. Coast Indus., 447.

Chronologically, California comes next. In nineteen hundred and fifty eight the first California mill was built. This was a time when industrial skill was scarce and extraordinarily high, when raw material was of an inferior quality, when money was loaned at exorbitant [illegible]. In a word the manufacturer had to struggle against all [illegible] difficulties in-cident to starting a new industry.

In 1861 it became evident that the venture grew from the productive industries of the nation had to be clothed and equipped; Eastern cities were [illegible] mills and building new ones. Thus were [illegible] into [illegible]. Every card and spindle and loom was [illegible] to its utmost capacity. During this period the Pacific Coast woolen mills began to reap the benefits with the energy and [illegible] patience of their promoters so well deserved.

The first woolen mill was the [illegible]. It contained, however, of eighteen hundred and eight [illegible] the nine mills. But since then the number of mills and [illegible] production have increased. These mills consumed a little [illegible] than one-fifth of the wool product, but conditions are changing. Not only

- -

[illegible] Hittell, Pac. Coast Indus., 147.

mills are in operation, but the quality of their goods has been improved.[1]

Of course Washington took up the matter of woolen

- -

[1] Bancroft, Hist. of Cal., VII, 88. Outline history of the pioneer Woolen Mills.

The project started in the mind of Mr. Peck, who gave his attention to the subject and satisfied himself that the wool yield of coast would continue to increase rapidly, that the necessity of exporting the bulk of the clip would give great advantage to San Francisco manufacturer in quality and price of his wool and that the weaving of coarse woolen goods must be a source of profit in a few years.

The mills were erected in 1858 at Black Point in the northwest part of San Francisco. The buildings were of wood and at same time were spacious and convenient. They were, too, filled with costly machinery, which had been carefully selected from eastern foundaries The mills began to work in 1859. After having run a few years the mills burned down, Oct., 1861. At this time the market in that condition in which the manufacturer was able to realize a profit from the operation of the mills.

When the mills burned they were possessed with 4 sets of cards and 16 looms. The proprietors set about immediately to rebuild. The buildings were of brick, more spacious and were constructed with idea of greater safety. In December, however, of 1861 a company was incorporated to purchase the business. The capital was at first $100,000, but soon after it was increased to $500,000. The new mill began operation in June, 1862 with 9 sets of cards, 31 looms and 2,800 spindles. For sometime the entire capacity of the mills was needed to supply the demand on the coast.

In a few years this mill with the Mission woolen mills drove out of the market all those goods manufactured elsewhere,, of the kind they made. The home demand was good and it was a prosperous day for the mills.

In 1881 the mills occupied a four story brick building 60 feet by 400 ft. They had 38 sets of cards, 130 looms, and 12,000 spindles.

The mills manufactured blankets, tweeds, cassimeres, dorskins and other woolen goods.

mills are in operation, but the quality of their goods has been improved.[1]

Of course Washington took up the matter of woolen

- -

[1] Bancroft, Hist. of Wash., [illegible] history of the pioneer Woolen Mills.

The project started in [illegible] gave his attention to the project and [illegible] that the wool yield of [illegible] region, that the necessity of exporting the wool [illegible] give great advantage to San Francisco [illegible] in quality and price of his wool and that the [illegible] goods must be a source of profit in [illegible].

The mills were erected in [illegible] in the northwest part of San Francisco. [illegible] of land and at same time were operated [illegible]. They were, then, filled with costly machinery, [illegible] and mostly secured from eastern foundries. The [illegible] in 1862. After having run a few years the mill [illegible] 1863. At this time the market in [illegible] the manufacturer was able to realize [illegible] of the mills.

When the mills were first [illegible] of cards and 16 looms. The [illegible] immediately to rebuild. The buildings were of brick, [illegible] were constructed with idea of greater [illegible]. However, of 1881 a company was incorporated [illegible] business. The capital was at first [illegible] it was increased to [illegible]. The new mill began operation in June, 1883 with a [illegible] of cards, [illegible] looms. For something the [illegible] mills were [illegible] to supply the demand on the [illegible].

In a few years this mill [illegible] drove out of the market all [illegible] where, of the kind they made. The [illegible] learned [illegible] it was a prosperous day for the [illegible].

In 1891 the mills comprised [illegible] 60 feet by 400 ft. They had [illegible] of cards, 120 looms, and 12,000 spindles.

The mills manufactured [illegible], tweeds, cassimeres, doeskins and other woolen goods.

manufacture after Oregon and California.

- -

Their product in 1866 was 30,000 pairs of blankets, 60,000 yards of broadcloth, tweeds, cassimeres, 375,000 yards of flannel. The mills consumed 1,500,000 pounds of fine wool. In 1867 40,000 pairs of blankets were made, 100,000 yards of broadcloth, tweeds and cassimeres. 300,000 yards of flannel. Consumed 1,600,000 pounds of wool. But later it is found that the average yearly consumption was about 3,500,000 pounds of wool and 100,000 pounds of cotton. The material cost about $600,000 while the value of their product was about $1,500,000. Coal cost about $70 a day, water $700 a month. Employ about 800 hands, of whom 500 were white.

The history of each woolen mill is not very different from this, but whether or not the mill is now in operation I cannot tell. Cronise, Wealth of Cal., 440; Hittell, Pac. Coast Ind., 440-441; Bancroft, Hist. of Cal., VII, 88.

The following table will give the situation in reference to the industry from 1860 to 1890.

Number of establishments.

State	1860	1870	1880	1890
Oregon	1	6	10	6
Cal.	1	5	9	15
Wash.	-	-	1	1
Total	2	11	20	22

Number of employees.

State	1860	1870	1880	1890
Cal.	60	659	823	1,379
Oregon	30	173	216	412
Wash.	--	---	29	not given.
Total	90	832	1068	1,791

Sex	1860		1870		1880		1890
State	Male	Female	M.	Fe.	M.	Fe.	-----
Cal.	40	20	534	31	108	108	-----
Oregon	27	3	125	7	166	33	-----
Wash.	--	-	---	-	18	8	-----
Total	67	23	709	38	892	149	

Capital.

State	1860	1870	1880	1890
Cal.	$100,000	$1,735,000	1,676,500	2,995,950.
Oregon	70,000	380,500	566,800	1,350,585
Wash.	---	---	40,000	?
Total	$170,000	2,165,500	2,283,300	4,346,535.

manufactures after Oregon and California.

- -

Their product in 1880 was 40,000 pairs of blankets, 60,000 yards of broadcloth, tweeds, cassimeres, [illegible] yards of flannel. The mills consumed 1,[illegible],000 pounds of fine wool in 1887 40,000 pairs of blankets were made, 120,000 yards of broadcloth, tweeds and cassimeres, 300,000 yards of flannel. Consumed 1,800,000 pounds of wool. At that time it is found that the average yearly consumption was about 5,[illegible],000 pounds of wool and 100,000 pounds of cotton. The material cost about $800,000 while the value of their product was about $1,800,000. Coal cost about [illegible] a day, [illegible] tons. Employed about 800 hands, of whom 300 were white.

The history of each woolen mill is an [illegible] from this, but whether or not the mill is now in operation I cannot tell. Oregon, Washington Territory, Idaho, Pacific Coast Ind., 440-441; Bancroft's Hist. of [illegible], 324.

The following tables will give the statistics in reference to the industry from 1880 to 1890.

Number of establishments.

State	1880	1870	1860	1850
Oregon	1	[illegible]	[illegible]	0
Cal.	1	[illegible]	[illegible]	15
Wash.	[illegible]	[illegible]	[illegible]	1
Total	2	12	[illegible]	22

Number of employees

State	1880	1870	1860	1850
Cal.	40	300	[illegible]	1,276
Oregon	27	175	[illegible]	412
Wash.	--	---	[illegible]	Not given
Total	67	475	[illegible]	1,688

State	1880	1870	1860	1850
Cal.	40	300	[illegible]	-----
Oregon	27	175	[illegible]	-----
Wash.	--	---	[illegible]	-----
Total	67	475	[illegible]	[illegible]

Capital.

State	1880	1870	1860	1850
Cal.	$100,000	$[illegible],000	$[illegible],000	$[illegible],000
Oregon	70,000	300,000	300,000	1,[illegible],000
Wash.	---	---	[illegible]	[illegible]
Total	$170,000	$[illegible],000	$[illegible],000	$[illegible],000.

The legislature of the Territory passed an act, January eighteen hundred and sixty incorporating the Puget Sound Woolen Manufacturing Company, of Tumwater, but nothing ever came of it except the name. This was suggestive of what ought to be done if no more. Again, five years later, the Washington Woolen Manufacturing Company of Thurston county was incorporated with results as in the other instance. Other attempts were made but all equally unsuccessful.[1]

- -

Wages.

State	1860	1870	1880	1890
Cal.	$33,600	$230,200	$334,318	$331,718
Oregon	16,200	112,113	86,088	175,313
Wash.	---	---	52,000	---
Total	$49,800	$342,313	$472,396	$507,031

Cost of Material.

State	1860	1870	1880	1890
Cal.	$50,000	$608,141	997,539	828,771
Oregon	37,600	221,645	227,486	327,252
Wash.	---	---	52,000	---
Total	$87,600	$829,786	$1,277,025	$1,156,023

Value of Product.

State	1860	1870	1880	1890
Cal.	$150,000	$1,102,759	$1,654,858	$1,428,203
Oregon	85,000	492,857	549,030	614,932
Wash.	---	---	70,000	---
Total	$235,000	$1,595,616	$2,253,888	$2,043,135

8th Census - Manufactures.
9th " Ind. and Wealth, Woolen and Manufacture - 1894. p.52-55.

[1] Bancroft, Hist. of Wash, Idaho, Mont., p. 350 - 351. There is at least one woolen mill in Washington today, which employs 75 men. Seattle Post-Intelligence, Sept. 27, 1895.

The legislature of the Territory passed on act, January eighteen hundred and sixty i corporating the Puget Sound Woolen Manufacturing Company, of Tumwater, but nothing over come of it except the name. This was merely a sign of what might to be done if no more. Again, five years later, the Washington Woolen Manufacturing Company of Tumwater county was incorporated with results as in the other instance. Other attempts were made but all equally unsuccessful.

- -

State	1890	[illegible]	[illegible]	1890
Cal.	[illegible]	[illegible]	[illegible]	[illegible]
Oregon	10,000	[illegible]	[illegible]	[illegible]
Wash.	---	---	[illegible]	---
Total	[illegible]	[illegible]	[illegible]	[illegible]

Cost of Materials.

State	1890	[illegible]	[illegible]	1890
Cal.	[illegible]	[illegible]	[illegible]	[illegible]
Oregon	37,000	[illegible]	[illegible]	[illegible]
Wash.	---	---	[illegible]	---
Total	[illegible]	[illegible]	[illegible]	[illegible]

Value of Product.

State	1890	[illegible]	[illegible]	1890
Cal.	[illegible]	[illegible]	[illegible]	[illegible]
Oregon	36,000	[illegible]	[illegible]	[illegible]
Wash.	---	---	[illegible]	---
Total	[illegible]	[illegible]	[illegible]	[illegible]

6th Census - "Manufactures."
" 7th " Final and Quick Work.
" 8th Manufactures - [illegible], [illegible]-32.

Bancroft, Hist. of Wash, Idaho, Mont., p. 390 - 391.
There is at Lewis one woolen mill in Washington today, which employs 75 men. Seattle Post-Intelligence, Sept. 27, 1896.

2. Cotton Industry.

a) Production of Cotton.

This industry is selected because it is one that is likely to become a very important one for the Coast. It is claimed by one party that the soil is not becoming exhausted of those elements that produce good and abundant wheat. By another party it is contended that exhaustion is taking place by the continuous cropping of the land to wheat, and in order to secure the best results in wheat growing, some alternative crop must be planted. Cotton, it is said, is one of the most important substitutes.[1]

Cotton was indigenous to Mexico, or at least cultivated by the Aztecs before the Spanish Conquest. It is still extensively grown there, but is of the same kind that it was four centuries ago.[2] It is due to the Spaniards, however, that it was introduced into California, where one of the mission fathers cultivated it to some extent and for a short time at Paula.[3] But subsequent planters brought their knowledge to

- -

[1] Earlier attitudes on this point are expressed in Transactions of Cal. Agri. Society, 1870. Later, in Tobin's Labor Report, p.24. "Increased attention is being given to this staple in Cal." Commercial Herald, Jan. 13, 1881, p.8.

[2] Hittell, Pac. Coast Ind. 283 - 284.

[3] Respecting special agriculture products it appears that only cotton raising was attempted without success at San Gabriel in 1808. Bancroft, Hist. of Cal., II, 177.

2. Cotton Industry.

a) Production of Cotton.

This industry is isolated insofar as it is one that is likely to become a very important one for the Coast. It is claimed by one party that the soil is not becoming exhausted of those elements that produce good and abundant wheat. By another party it is contended that exhaustion is taking place by the continuous cropping of the land to wheat, and in order to secure the best results in wheat growing, some alternative crop must be planted. Cotton, it is said, is one of the most important substitutes.[1]

Cotton was indigenous to Mexico, or at least cultivated by the Aztecs before the Spanish conquest. It is still extensively grown there, but is on the same kind that it was four centuries ago.[2] It is one to the Spaniards, however, that it was introduced into California, since one of the mission fathers cultivated it to some extent and found it about time at Tulle.[3] But subsequent planters brought little knowledge to

- -

[1] Earlier attitudes on this point were expressed in Transactions of Cal. Agri. Society, 1877. Later, in Tobin's Labor Report, p.24. "Increased attention is being given to this staple in Cal." Commercial Herald, Jan. 12, 1881, p.6.

[2] Hittell, Pac. Coast Ind. 112 - 114.

[3] Respecting special agricultural products it appears that only cotton raising was attempted without success at San

bear[1] upon the industry and proved beyond a doubt that cotton could be successfully and profitably produced in California.[2] As early as eighteen hundred and fifty six it was demonstrated by growers that cotton was a thrifty growing plant in this State. In that year the California State Agricultural Society offered prizes for the best cotton produced.[3] During the Civil War when cotton commanded a high price the State Legislature offered premiums for the production of cotton as follows: For the first one hundred bales, each weighing three hundred pounds, three thousand dollars; for the same quantity produced the first, second and third succeeding years, two thousand, one thousand and five hundred respectively.[4] This move on the part of the state stimulated and encouraged the growing of cotton, thus causing a large acreage to be planted in the

- -

[1] Bancroft, Hist. of Cal., VII, 30 - 31.

[2] Tobin, Labor Report, p. 22.

[3] The 3rd fair of the Cal. Agri. Soc. was held at San Jose, Oct., 1856. Premiums offered for cotton were, "For the best acre of cotton, $75; for the 2nd best acre of cotton, $25." Transactions of Cal. St. Agri. Soc., 1872, p. 249.

[4] Bancroft, Hist. of Cal., II, 177; Overland Monthly, Vi, 328 - 335; XIII, 18-25.

been[1] upon the industry and proved beyond a doubt that cotton could be successfully and profitably produced in California. As early as eighteen hundred and fifty six it was demonstrated by pioneers that cotton was a thrifty growing plant in this state. In that year the California State Agricultural Society offered prizes for the best cotton produced. During the Civil War when cotton commanded a high price the State Legislature offered premiums for the production of cotton as follows: For the first one hundred bales, each weighing five hundred pounds, three thousand dollars; for the same quantity produced the first, second and third succeeding years, two thousand, one thousand and five hundred respectively.[2] Little now on the part of the state authorities had encouraged the growing of cotton, this causing a large acreage to be planted in the

- -

[1] Bancroft, Hist. of Cal., VII, 20 - 21.

[2] Tobin, Labor Report, p. 12.

[3] The 3rd Fair of the Cal. Agri. Soc. was held at San Jose, Oct., 1858. Premiums offered for [illegible] were, "for the best bale of cotton, $75; for the [illegible] bale of cotton, $25." Transactions of Cal. St. Agri. Soc., 1858, p. 248.

[4] Bancroft, Hist. of Cal., II, [illegible]; Overland Monthly, VI, 328 - 338; XVII, 12-23.

various interior valleys of the state. The first prize went to Los Angelos for 108 acres of cotton. The other prizes were divided among Fresno, Kern, and Merced counties.

In eighteen hundred and seventy three, twenty two thousand eight hundred and eighty six pounds of California cotton were shipped to Liverpool and found ready sale. In eighteen hundred and seventy four one hundred and sixty acres along the Sacramento River bottom yielded thirty six thousand pounds. Besides this there were several other tracts plants. These aggregated nearly six hundred acres. The crop from this land proved a success. The acreage in eighteen hundred and seventy five was still larger. At that time there was a lull in enthusiasm for cotton production. There was no ready market[1] for cotton, and storage, insurance, commission and other incidental expenses ate up the producer's profits. Wheat was then commanding a high price and ready money, thus the farmer naturally turned attention to wheat growing. This was the situation until eighteen hundred and eighty nine

- -

[1] San Francisco Chronicle, Jan. 1, 1892; Internal Commerce Report, 1890, p. 330.

various interior valleys of the state. The first crop went to Los Angeles for 100 acres of cotton. The other crops were divided among Fresno, Kern, and Kings counties.

In eighteen hundred and seventy three, twenty two thousand eight hundred and eighty six pounds of California cotton were shipped to Liverpool and found ready sale. In eighteen hundred and seventy four one hundred and sixty acres along the Sacramento River bottom produced thirty six thousand pounds. Besides this there were several other trial plantings. These experiments merely confirmed earlier results. The crop from this land proved a success. The average in this hundred and seventy five was still larger. At this time there was a lull in enthusiasm for cotton production. There was no ready market for cotton, and storage, insurance, commission and other incidental expenses ate up the producer's profits. Wheat was then commanding a high price and ready money, this the farmer naturally turned attention to raising. This was the attention until eighteen hundred and seventy nine

- -

[1] San Francisco Chronicle, Jan. 7, 1880; Annual Commerce Report, 1880, p. 800.

when interest in cotton production was revived,[1] and much interest is at present manifested in the possibilities of cotton culture in California. Except the competition with Japan[2] the outlook is fairly bright.

b. Cotton Manufacture.

The first mill for the manufacture of cotton fabrics on the Pacific Coast was erected by W.H.Rector and Son at Clinton station, East Oakland, California, in eighteen hundred and sixty five.[3] Most of the raw material used, however, was imported from the East by steamers at twenty five cents, in gold, a pound. In February, eighteen hundred and sixty seven the mill was enlarged and the products diversified. But the proprietors found little or no profit in the enterprise, consequently in eighteen hundred and sixty eight[4] a proposi-

- -

[1] Tobin, Labor Report, pp. 23-24. Tried as a matter of curiosity by American farmers in Cal. between 1850 and 1870 but not as encouraging as might be, but it is now on the rise. Hittell, Pac. Coast Ind., 284.

[2] San Francisco Call, Jan. 24, 1896.

[3] Organized Aug., 1865. Capital, $100,000. Bancroft, Hist. of Cal., VII, 88-89; Tobin, Labor Report, 18.

[4] To Jan. 1868 the mill made shirting, sheeting, and drills with a species of wool and cotton tweeds. In the same month of that year the capital was increased to $200,000 with the intention to procure machinery for making grain bags. The buildings of the Oakland Cotton Manufacturing Company were two story brick, 90 by 48, two wings 20 by 30 each, contained

when interest in cotton production was revived, and con- in-
terest is at present manifested in the establishment of cot-
ton culture in California. Moreover, the conditions will favor
the outlook is fairly bright.

b. Cotton Manufacture.

The first mill for the manufacture of coarse fabrics
on the Pacific Coast was erected by [illegible] at
Clinton station, Post Office, [illegible], in [illegible] nine-
teen and sixty five. Part of the machinery, including
was imported from the East by [illegible] across
in gold, a pound. In February, [illegible] sixty
seven the mill was destroyed and the proprietors [illegible] ruined. But
the proprietors found little or no credit in the enterprise,
consequently in [illegible] [illegible] [illegible]

---

[1] Tobin, Labor Report, [illegible]. Tobin [illegible] author of
curiously by American farmers in Cal. [illegible] no 1870
but not so economically as might be, for it is [illegible] the ring.
Hittell, Pac. Coast Ind., [illegible].

[2] San Francisco Call, Jan. 24, 1904.

[3] Organized Age., 1903. Oberlin, [illegible] Democratic,
Hist. of Cal., VII, 38-39; Tobin, Labor [illegible], 10.

[4] To Jan. 1905 the mill made [illegible], [illegible], and
drills with a species of wool and cotton [illegible]. In the same
month of that year the original was [illegible] to [illegible], [illegible]
the intention to procure [illegible] [illegible]. The
buildings of the Oakland Cotton Manufacturing Company were
two story brick, 60 by 48, two wings [illegible] 100 each, contained

tion was accepted to convert the mill into a jute manufactury, which has recently had to close its doors.[1]

For fiften years no attempt was made to revive this important industry in California. But in eighteen hundred and eighty three, an enterprising Scotchman, Mr. William Rutherford, undertook the work of starting a cotton mill in the immediate vicinity of the one which had failed. He knew the business of cotton manufacturing thoroughly, having been brought up to it from his early years. He also possessed capital which he was willing to venture in the enterprise. The success of the California Cotton Mills is due in the main, to three factors, namely, skill, experience, capital.[2] The mills have been

- -

35 looms, employed 100 men and women. Cronise, Wealth of Cal., p 151-152, 605.

[1] San Francisco Call, Dec. 17, 1895, p13.

[2] Tobin, Labor Report, p 19. The 8 buildings cover 6 acres of ground, and are of brick, one story high. They were planned by Mr. Rutherford himself. The mills were set in motion in 1885, and are owned and controlled by a joint stock company having a capital of $600,000 of which $350,000 is paid up.

The number of cotton spindles operated is 4000 and jute spindles 1,020. All the machinery is of the latest and most improved pattern and cost about $200,000.

The mills manufacture cotton sail, sewing seine, and wrapping twines, carpets, horse blankets, sail cloth and various kinds of rope. In 1889 manufactured 200 tons of small twine. Supply market with its specialties for all states and territories along the coast.

Total amount of production for the year ending July 5,

tion was accepted to convert the mill into a jute manufactory, which has recently had to close its doors.[1]

For fifteen years no attempt was made to revive this important industry in California. But in eighteen hundred and eighty three, an enterprising Gentleman, Mr. William Hinkerford, undertook the work of starting a cotton mill in the immediate vicinity of the one which had failed. He knew the business of cotton manufacturing thoroughly, having been brought up to it from his early years. He also possessed capital which he was willing to venture in the enterprise. The success of the California Cotton Mills is due in the main, to three factors, namely, skill, experience, capital.[2] The mills have been

- -

35 looms, employed 100 men and women. Cronise, Natural of Cal., p 181-182, 805.

[1] San Francisco Call, Dec. 17, 1893, 13.

[2] Tobin, Labor Report, p 15. The 5 buildings cover 6 acres of ground, and are of brick, one story high. They were planned by Mr. Hinkerford himself. The mills were set in motion in 1888, and are owned and controlled by a joint stock company having a capital of $600,000, 70 of which ($420,000) is paid up.

The number of cotton & jute operatives is 4000 and jute spindles 1,000. All the machinery is of the latest and most improved patterns and cost about $600,000.

The mills manufacture cotton sail, warping twine, and wrapping twines, carpets, horse blankets, sail cloth and various kinds of rope. In 1890 manufactured 127 tons of small twine. Supply market with its specialties for all Mexican and territories along the coast.

Total amount of production for the year ending July 5,

a success from the first.[1]

3. Iron Industry.

a) Iron production.

California, Oregon and Washington contain deposits of iron of sufficient quantity to make its mining and preparation for use a very important branch of the iron business of this Coast.

Washington is perhaps the leading state of the Pacific Slope in this respect. Already is Seattle, with her nine active foundries called the Pittsburg of the West.[2]

As in the woolen and other industries, so in the smelting of iron ore does Utah receive the credit of having taken the first step. High cost of transportation, the small value of iron in proportion to its weight, and the straitened circumstances of the Mormons led them to attempt to obtain at home the needed supply. Numerous furnaces were erected, but generally without satisfactory results. But when the Union Pacific railroad reached them in eighteen hundred and sixty

- -

1889 was $286,955.18. Raw material in cotton cost $125,701.47. Jute, $29,875.05. Coal and oil, $16,891.51. Wages, $71,004.02.
The production in 1886 was $128,908.25. Comparing with 1889 we see an increase of more than double in three years. Tobin, Labor Report. Internal Commerce Report, 1890. 393-394.

[1] Transactions of Cal. St. Agri. Soc., 1889, p 183.
[2] Internal Commerce Report, 1890. 1033.

a success from the first.[1]

3. Iron Industry.

a) Iron production.

California, Oregon and Washington contain deposits of iron of sufficient quantity to make its mining and smelting for use a very important branch of the iron business of this Coast.

Washington is perhaps the leading state of the Pacific Slope in this respect. Already is Seattle, with her nine active foundries called the Pittsburg of the West.[2]

As in the woolen and other industries, so in the smelting of iron ore does Utah receive the credit of having taken the first step. High cost of transportation, the small value of iron in proportion to its weight, and the straitened circumstances of the Mormons led them to attempt to obtain at home the needed supply. Numerous furnaces were erected, but generally without satisfactory results. But when the Union Pacific railroad reached Utah in eighteen hundred and sixty

- -

1880 was [illegible]. Raw material in cotton cost [illegible], jute, [illegible]. Coal and oil, [illegible]. Wages, [illegible].
The production in 1880 was [illegible]. Comparing with 1889 we see an increase of more than double in three years. Tobin, Labor Report. Internal Commerce Report, 1890. [illegible].

[1] Transactions of Cal. St. Agri. Soc., 1878, p 183.
[2] Internal Commerce Report, 1890. 1890.

nine efforts in this line of work almost entirely ceased. They could now obtain the desired amount at reasonable rates and at the same time had an outlet for their agricultural produce.[1]

The next state to take up this phase of the iron business was Oregon. In eighteen hundred and sixty five the Oregon Iron Company at Oswego had an establishment on the Willamette river near that point. The first shipment of the product of this company's work consisted of fifty tons of iron which was carried to San Francisco in eighteen hundred and sixty seven.[2]

Washington soon after took up this kind of work near Port Townsend and has been in operation since February, eighteen hundred and eighty one under the name of the Puget Sound Iron Company.[3]

The manufacture of pig iron in California takes its beginning in the early eighties. Although the deposits have been known for many years, still the delay in opening and working of them has been a matter of dollars and cents. As long as the consumer of pig iron could obtain it cheaper from abroad than it could be produced at home he did it. But in spite of

- -

[1] Hittell, Pac. Coast Industries, p 310.

[2] Bancroft, Hist. of Oregon, II, 733-735; Hittell, Pac. Coast Ind. 311; Int. Com. 401.

[3] Hittell, Pac. Coast Ind. 311; Int. Com., 401.

mine efforts in this line of work almost entirely ceased. They could now obtain the desired amount at reasonable rates and at the same time had an outlet for their agricultural products.[1]

The next state to take up this phase of the iron business was Oregon. In eighteen hundred and sixty five the Oregon Iron Company at Oswego had an establishment on the Willamette river near that point. The first shipment of the product of this company's work consisted of fifty tons of iron which was carried to San Francisco in eighteen hundred and sixty seven.[2]

Washington soon after took up this kind of work near Port Townsend and has been in operation since February, eighteen hundred and eighty one under the name of the Puget Sound Iron Company.[3]

The manufacture of pig iron in California takes its beginning in the early eighties. Although the deposits have been known for many years, still the delay in opening and working of them has been a matter of dollars and cents. As long as the consumer of pig iron could obtain it cheaper from abroad than it could be produced at home he did it. But in spite of

- -

[1] Hittell, Pac. Coast Industries, p. 310.

[2] Bancroft, Hist. of Oregon, II, 755-756;
Hittell, Pac. Coast Ind. 311; Int. Com. 402.

[3] Hittell, Pac. Coast Ind. 311; Int. Com., 402.

this situation the California and Steel Company.[1] was incorporated in eighteen hundred and eighty one. For a few years it worked the iron ore into iron, but the decline of mining was a partial cause of its cessation. The question Why the decline of iron production in California? suggests itself. Although iron ore exists in many of the counties of the State, and sometimes in extensive deposits, yet the absence of a suitable coal for blast furnace work prevents its being utilized. In eighteen hundred and ninety four only a small quantity was shipped to San Francisco, and so far no record is made of any worked in the last year.[2]

b) Iron Manufacture.

The principal processes in use are the casting and rolling of iron; the construction of stamp mills, hoisting works

- -

[1] Capital, $2,675,000 in 26,750 shares. Subscribed and paid up capital, $1,601,000. Destroyed by fire, but immediately rebuilt. It did not prove a great success. It produced in 1882, 4000 tons of iron; 1883, 5000 tons; 1884, 2,200 tons; 1885, 1750 tons. For the twenty-five years, ending Dec. 31, 1888 the imports of pig iron at San Francisco amounted to 348,112 tons. Of this, 20,971 tons were from Europe, 2165 tons from the Atlantic States. See Hittell, Pac. Coast Ind., pp.310-314; Bancroft, Hist. of Cal., VII, 94; Int. Com., 401-402.

[2] San Francisco Call, Dec. 25, 1895, p 28. Production of iron ore in 1894 was 200 tons, valued at $1,500,000; in '93, $2,000,000.

this situation the California and Oregon Company[1] was incorporated in eighteen hundred and eighty one. For a few years it worked the iron ore into iron, but the mining of coking was a partial cause of its cessation. The production of the coking of iron production in California suggests itself. Although iron ore exists in many of the counties of the state, and sometimes in extensive deposits, yet the absence of a suitable coal for blast furnace work prevents its being utilized. In eighteen hundred and ninety four only a small quantity was shipped to San Francisco, and so far as found in trade of any worked in the last year.[2]

b) Iron Manufacture.

The principal processes in use are the melting and refining of iron; the construction of blast drills, rotative works

- -

[1] Capital, $2,075,000 in 20,750 shares. Subscribed and paid up capital, $1,001,000. Destroyed by fire, but immediately rebuilt. It did not prove a great success. It produced in 1882, 8000 tons of iron; 1883, 3800 tons; 1884, 1,200 tons; 1885, 1750 tons. For the twenty-five years, ending Dec. 31, 1888 the imports of pig iron at San Francisco amounted to 348,112 tons. Of this, 10,171 tons were from Europe, 2165 tons from the Atlantic States. See Mitchell, Pac. Coast Ind., pp 210-214; Bancroft, Hist. of Cal., VII, 94; Int. Com., 401-402.

[2] San Francisco Coll, Dec. 25, 1892, 29. Production of iron ore in 1894 was 200 tons, valued at $1,000,000; in '95, $2,000,000.

and pumps for mines, of steam engines and boilers for mines, factories, and steamships; of locomotives for railroads; of castings for houses, agricultural and other machinery, and kitchen furniture; the making of wire, wire rope, wire cloth, other wire wares, saws, edged tools and cutlery.

Notwithstanding the high price of labor, dearness of coal and the fact that until recently most of the material used in the manufacture of iron has been imported, the growth of this branch of industry has been remarkable. Including all its departments the gross value for eighteen hundred and eighty one was near twenty million dollars as against about six millions in eighteen hundred and seventy one. As no figures for the Coast for a later period have been obtained, a statement relative to an estimate in San Francisco will suffice. In ighteen hundred and ninety four manufacture amounted to about five million dollars[1].

It may be said that the iron working trade has long been an important and prominent industry of San Francisco. There are several reasons for it, and probably chief among them is the fact that San Francisco's isolation from the great manufacturing centres of the country for so many years threw the

- -

[1] Hittell, Pac. Coast Ind., pp 652-654.

and pumps for mines, of steam engines and boilers for mines, factories, and steamships; of locomotives for railroads; of castings for houses, agricultural and other machinery, and kitchen furniture; the making of wire, wire rope, wire cloth, other wire works, saws, edged tools and cutlery.

Notwithstanding the high price of labor, rearness of coal and the fact that until recently most of the material used in the manufacture of iron was been imported, the growth of this branch of industry has been remarkable. Including all its departments the gross value for eighteen hundred and eighty one was more twenty million dollars as against about six millions in eighteen hundred and seventy one. As no figures for the coast for a later period have been obtained, a statement relative to an estimate in San Francisco will suffice. In eighteen hundred and ninety four manufactures amounted to above five million dollars[1].

It may be said that the iron working trade has long been an important and prominent industry of San Francisco. There are several reasons for it, and probably first among them is the fact that San Francisco's isolation from the great manufacturing centres of the country for so many years drew the

- -

[1] Hittell, Pac. Coast Ind., pp 232-234.

people largely upon their own resources. This same cause may be assigned as the motive which occasioned the establishment of many of the extensive mechanical lines of industry in San Francisco as well as of the Coast at the present time.[1]

The growth, however, of the iron interest on the Coast has depended and must still, to some extent, depend upon the demand for mining machinery. It was not until the inventive genius of the American devised the great mills for the mines that the first important and decisive step in advance in the foundry business was taken. And when the skilled workmen had been introduced into the Coast foundries some of the finest and best machinery of the world, and in mining machinery she takes the lead, has been turned out from her shops.

The only demand of any consequence in the early period of iron manufacture was for mining machinery. But the foundry owners saw that they needed a wider market for development, hence their efforts to extend their operations. As a result they can and do now supply most of the Coast's needs in this regard.

Another important point is, that the enormous demand for machinery and the high price it commanded induced eastern

- -

[1] San Francisco Chronicle, Dec. 29, 1895, p 24.

people largely upon their own resources. This same cause may be assigned as the motive which occasioned the establishment of many of the extensive mechanical lines of industry in San Francisco as well as of the first at the present time.[1]

The growth, however, of the iron interest on the Coast has depended and must still, to some extent, depend upon the demand for mining machinery. It was not until the inventive genius of the American developed the great skills for the times that the first important and decisive step in advance in the foundry business was taken. Not when the skilled workman had been introduced into the Coast foundries some of the finest and best machinery of the world, and in mining machinery also takes the lead, has been turned out. Even he [illegible] people.

The only demand of any consequence in the early period of iron manufacture was for mining machinery. But the foundry owners saw that they needed a larger market for development, hence their efforts to extend their operations. As a result they can and do now supply most of the Coast's needs in this regard.

Another important point is, that the enormous demand for machinery and the high price it commanded induced capital

- -

[1] San Francisco Chronicle, Dec. 30, 1883, p 34.

manufacturers to make and ship to this coast articles which they supposed to be suitable for the purpose, but when the test was applied they proved to be useless. The local establishments were, therefore, called upon to supply the demand, thus giving the monopoly.

The Donahue foundry, now known as the Union Iron Works, established in eighteen hundred and forty nine, was the first enterprise of the kind on the Pacific Coast. In the next year the Vulcan foundry, the Sutter Iron Works, and the Pacific foundry began work. The mining operations during the two or three years succeeding eighteen hundred and fifty caused the erection of small foundries and machine shops in many mining towns.

The leading foundries of the Pacific Coast compare favorably with those in the East.[1] The Union Iron Works stand at the head of the Iron Industry of the Pacific Slope,[2] and has a

- -

[1] Hittell, Pac. Coast Ind., 658-659.

[2] San Francisco Journal of Commerce, Oct. 31, 1895. From a small beginning in a blacksmith shop in 1849 the Union Iron Works have grown to their present dimensions. In 1865 the name of the firm changed from Donahue to Prescott, Scott and Company. In 1885 business demanded larger quarters and the establishmentwas moved to Petrero, or what is also sometimes called South San Francisco. They are complete in their appointment; and are said to be as well, if not better, equipped, as

manufacturers to make and ship to this coast articles which they supposed to be suitable for the purpose, but when the test was applied they proved to be useless. The local establishments were, therefore, called upon to supply the demand, thus giving the monopoly.

The Donahue Foundry, now known as the Union Iron Works, established in eighteen hundred and forty-nine, was the first enterprise of the kind on the Pacific Coast. In the next year the Valcan Foundry, the Gutter Iron Works, and the Pacific Foundry began work. The mining operations during the two or three years succeeding eighteen hundred and fifty caused the erection of small foundries and machine shops in many mining towns.

The leading foundries of the Pacific Coast compare favorably with those in the East.[1] The Union Iron Works stand at the head of the Iron Industry of the Pacific Coast,[2] and has a

- -

[1] Mitchell, Pac. Coast Ind., 88-89.

[2] San Francisco Journal of Commerce, Oct. 31, 1901.
From a small beginning in a blacksmith shop in 1849 the Union Iron Works have grown to their present dimensions. In 1868 the name of the firm changed from Donahue to Prescott, Scott and Company. In 1883 business demanded larger quarters and the establishment was moved to Potrero, or what is also sometimes called South San Francisco. They are capable in their equipment; and are said to be as well, if not better, equipped, as

history which shows enterprise and sound business judgment on the part of its managers.

4. The Manufacture of Beet Sugar.

One of the most important industries today is the production of sugar beets and the manufacture of sugar therefrom. Wherever the proper conditions exist this is apt to be introduced. But however that may be, it is a fact that the raising of the sugar beet and the extraction of sugar is becoming a very important factor[1] in California's agricultural prosperity; no less can be said with reference to her manufacturing phase of this industry.

- -

any iron works in the United States. These mills manufacture mining, milling and metallurgical machinery. The principal mills of the West are built here. They have also done considerable for the United States government. They built the Charleston, cruiser; San Francisco, cruiser; Monterey, coast defense vessel; Olympia, cruiser; and the Oregon, line of battle ship, which is now in the course of construction.

They have at present about 1500 men at work; when running at full capacity they employ 2500. Int. Com., 400-401; San Francisco Journal of Commerce, Oct. 31, 1895, p 5; Manufac. and Producers'Monthly. Nov., 1895, pp 16-17.

Another large concern is the Pacific Rolling Mills, established in San Francisco in 1865 with a capital of $1,000,000. In 1890 their capital stock was doubled for the purpose of enlarging the mills. This mill likewise shows enterprise in management. Made the first steel rails used on S.F. streets. Many other mills might be mentioned, some of larger operation but of a special corporation, as Central Pacific R.R.shops at Sacramento.

[1] San Francisco Call, April 12, 1896.

history which shows enterprise and sound business judgment on the part of its managers.

4. The Manufacture of Beet Sugar.

One of the most important industries today is the production of sugar beets and the manufacture of sugar therefrom. Wherever the proper conditions exist this is yet to be introduced. But however that may be, it is a fact that the raising of the sugar beet and the extraction of sugar is becoming very important factor[1] in California's agricultural prosperity; so less can be said with reference to her manufacturing phase of this industry.

- -

any iron works in the United States. These mills manufacture mining, milling and metallurgical machinery. The principal mills of the West are built here. They have also done considerable for the United States government. They built the Charleston, cruiser; San Francisco, cruiser; Lanterey, coast defense vessel; Olympia, cruiser; and the Oregon, line of battle ship, which is now in the course of construction.

They have at present about 1500 men [illegible]; when running at full capacity they employ 2500. Int. Com., 300-401; San Francisco Journal of Commerce, Oct. 31, 1900, p. 5; Manufacturers' and Producers' Monthly, Nov., 1900, pp. 10-11.

Another large concern is the Pacific Rolling Mills, established in San Francisco in 1868 with a capital of $1,000,000. In 1890 their capital stock was doubled for the purpose of enlarging the mills. This mill likewise also manufactures in manganese. Made the first about rolls used on U. S. cruisers. Many other mills might be mentioned, some of lesser operation but of a special cooperation, as Central Foundry, Shops at Sacramento.

[1] San Francisco Call, April 17, [illegible].

This is an excellent illustration of mutual relations between agricultural and manufacturing interests. The existence of one means the development of the other. Take away one and both are destroyed.

Before taking up this industry on the Pacific Slope it will add to our interest if we give attention to a few comparative statements. The Report of the United States Treasury Department for the fiscal year ending June thirty, eighteen hundred and eighty nine gives the dutiable sugar import of this country to be more than two and one half billion pounds, which was valued at more than seventy eight and a half million dollars. Adding to these sums two million more pounds which are duty free, and which are valued at more than ten million dollars we get a grand total of nearly three billion pounds which had a value of about ninety million dollars[1].

The amount of home production was two hundred and fifty four thousand five hundred and eight tons. Of this amount the southern states furnished two hundred and twenty four thousand five hundred and eight tons. The remaining thirty thousand was composed of sugar made from beets, sorghum, and maple, grown

- -

[1] 2,700,547,667 lbs. dutiable sugar.
$78,596,779.96 value " "
228,540,513 lbs. free from duty.
$10,260,048 value of free of duty sugar.
$93,679,325 value of whole import. Tobin, Labor Report, p 46.

This is an excellent illustration of mutual relations between agricultural and manufacturing interests. The existence of one means the development of the other. Take away one and both are destroyed.

Before taking up this industry on the Pacific Slope it will add to our interest if we give additional to a few comparative statements. The Report of the United States Treasury Department for the fiscal year ending June thirty, eighteen hundred and eighty nine gives the dutiable sugar import of this country to be more than two and one half billion pounds, which was valued at more than twenty eight and a half million dollars. Adding to these sums two million more pounds which are duty free, and which are valued at more than ten million dollars, we get a grand total of nearly three billion pounds which had a value of about ninety million dollars.[1]

The amount of home production was two hundred and fifty four thousand five hundred and eight tons. In addition the southern states furnished two hundred and twenty four thousand five hundred and eight tons. The remaining [illegible] thousand was composed of sugar made from beets, sorghum, and maple, grown

---

[1] 2,700,847,607 lbs. dutiable sugar.
78,526,778.00 value
228,040,513 lbs. free from duty.
10,240,042 value of free or duty sugar.
[illegible],079,325 value of whole import. Tariff. Labor Report.

in the western states.

The part that the Pacific Coast had in this production was played by her two sugar refineries. They supplied the whole Coast with their output[1] and had considerable export trade.

Pass now to the consideration of the beet sugar question. Richard Gird says that "we are filled with amazement when we consider" that at the beginning the originial plant was grown only for food and carried not more than five or six per cent of sugar, but by careful selection and cultivation for a period of less than one hundred years, the sugar content has increased to fourteen and fifteen per cent, or more than double; that the chemist and mechanical engineer have during the same time discovered methods and plans whereby the viscid, sticky, bad tasting and bad smelling juices are extracted from the root, and by one continuous process, partly chemical and partly mechanical, can within twenty four hours, and without touching the beets with the hand, change them into the purest and whitest of sugar; that at the rate of eight hundred to one thousand tons per day,

- -

[1] The value of their total product in 1860 was $1,600,000; In 1870, $4,000,000; in 1880, $7,000,000; in 1894, $18,000,000. From this we get a gain of 150% between 1860-1870; 75% between 1870-1880; 300% between 1860-1880; 150% between 1880-1894. This due to the development of the Hawaiian plantations. Hittell, Pac. Coast Ind., 346-347; San Francisco Chronicle, Dec.30, 1894.

in the western states.

The part that the Pacific Coast had in this production was played by her two sugar refineries. They supplied the whole Coast with their output[1] and had a considerable export trade.

Pass now to the consideration of the beet sugar industry. Richard Gird says that "it was filled with [illegible] difficulties" that at the beginning [illegible] only for food and carried [illegible] sugar, but by careful [illegible] loss than one hundred years, the sugar beet has increased to fourteen and fifteen per cent, or more [illegible] and mechanical engineer have [illegible] methods and plans whereby the vitality, [illegible] bad smelling juices are extracted [illegible] continuous process, partly [illegible] within twenty four hours, and without handling the beets with the hand, change them into the [illegible] sugar; that at the rate of eight hundred [illegible] tons per day,

---

[1] The value of their [illegible] 000; in 1870, [illegible] 000; in [illegible] 000. From this we get a gain of [illegible] tween 1870-1880; 300% between [illegible] This due to the development of [illegible] tail, Pac. Coast Ind., 346-347; [illegible] 1884.

the beets are manufactured into one hundred tons or more of sugar; and that by the joint efforts of the tiller of the soil, the chemist in his laboratory, the mechanic in his shop, this not-long-since plebian root has become the source from which three fifths of the world's supply of sugar is produced.[1]

From another writer we get a few more facts regarding the history of this root. He says that "it is difficult to trace the exact origin of this plant, which has become of so much interest and value in Europe, and is not of national, but also of continental importance to the people of the other side of the Atlantic." Its antiquity finds evidence in the fact that Theophrastus[2] describes two varieties; the deep red and the white beet. Olivett de Serres mentions in fifteen hundred and ninety nine only the red beet and says that it had long been introduced into Europe and that "the juice yielded on boiling, is similar to sugar sirup." This variety was introduced into England in fifteen hundred and forty eight. The white variety was unknown until fifteen hundred and seventy.

The industrial value of the beet does not seem to present itself until seventeen hundred and forty seven. At that

- -

[1] San Francisco Call, Dec. 25, 1895.

[2] A Greek scholar. Lived about 372 B.C.

the beets are manufactured into one hundred tons or more of sugar; and that by the joint efforts of the tiller of the soil, the chemist in his laboratory, the mechanic in his shop, this not-long-since plebian root has become the source from which three fifths of the world's supply of sugar is produced.[1]

From another writer we get a few more facts regarding the history of this root. He says that "it is difficult to trace the exact origin of this plant, which was become of so much interest and value in Europe, and is not of national, but also of continental importance to the people of the other side of the Atlantic." The antiquity finds reference in the fact that Theophrastus[2] describes two varieties; the deep red and the white beet. Olivet de Serres mentions in fifteen hundred and ninety nine only the red beet and says that it had long been introduced into Europe and that "the juice yielded or is taken, is similar to sugar sirup." This variety was introduced into England in fifteen hundred and forty eight. The white variety was unknown until fifteen hundred and seventy.

The industrial value of the beet does not seem to present itself until seventeen hundred and forty seven. At that

- -

[1] San Francisco Call, Dec. 26, 1890.

[2] A Greek scholar. Lived about 372 B.C.

time Margraff, a member of the Berlin Academy of Sciences, and believing that sugar was a regular constituant of plants other than sugar cane, made an examination of different varieties of vegetables and succeeded in separating from several kinds, varying quantities of crystallized sugar. He announced the results in a paper before the academy. He pronounced the beet the richest in sugar and believed that Europe would find it the basis of a great industry, and urged the Academy to consider the importance of the discovery and hoped to see steps taken leading to practical results. But death came too soon. However, Karl Franz Achard, his deciple, was the first to extract sugar from the beet on a large scale. But the announcement of his results fell on cold ears and nothing was done in a practical way for long time to come.

Interesting as is the history of this root, we must leave it here in order to give attention to some facts of its manufacture in France, Germany, Austria Hungary and the United States.

Under pressure of national emergency Napoleon III resolved to make France independent of sugar supply from foreign countries. This opened the way for the manufacture of sugar from beets in that country. His measures of encouragement were

time imagined, a member of the family working of Pasteur, and believing that sugar was a regular constituent of plants other than sugar cane, made an examination of different varieties of vegetables and succeeded in separating from several kinds, varying quantities of crystallized sugar. He announced the results in a paper before the academy. He pronounced the best the richest in sugar and believed that France could [illegible] of a great industry, and urged the Academy [illegible] the importance of the discovery and hoped to see [illegible] taking in practical results. The idea came too soon. However, Count Frans Adnard, his disciple, was the first to extract sugar from the beet on a large scale. But the encouragement of his results fell on cold ears and nothing was done in a practical way for long time to come.

Interesting as [illegible] of this [illegible], it must [illegible] it here in order to give attention to [illegible] of the manufacture in France, Germany, [illegible] the United States.

Under stimulus of national [illegible] Napoleon III resolved to make France independent of [illegible] from foreign countries. This opened the way for the [illegible] of sugar from beets in that country. His measures [illegible] were

to exempt from taxation for four years the product of every man who made a ton of sugar in France; also promised an extension of license to those who discovered improved methods. He further, established four imperial sugar factories with a capacity to produce two hundred tons per annum. In eighteen hundred and thirty seven, forty nine thousand tons were produced, and in eighteen hundred and eighty nine the amount put out was seven hundred thousand tons. The ten year periods from the beginning show amounts varying between the two above given.

The total value of the beet sugar product in France for each of the three years eighteen hundred and seventy three, seventy four, and seventy five was over fifty four million dollars. This required more than sixty thousand persons exclusive of those employed in the field.[1]

In Germany a liberal policy was likewise pursued. And the latest figures consulted showed Germany's production in eighty nine to be one million two hundred and twenty thousand tons of beet sugar.

- -

[1] Tobin, Labor Report, p 47. The following table shows the amounts produced in France from 1837 to 1887 and 1889 in ten year periods.

In 1837	49,000	tons	In 1877	243,000	tons
" 1847	64,000	"	" 1887	465,000	"
" 1857	151,000	"	" 1889	700,000	"
" 1867	224,7000	"			

to exempt from taxation for four years the producer of every ton who made a ton of sugar in France, also promised an extension of licences to those who discovered improved methods. Moreover, established four imperial sugar factories with a capacity to produce two hundred tons per annum. In eighteen hundred and thirty seven, forty nine thousand tons were produced, and in eighteen hundred and eighty nine the amount put out was seven hundred thousand tons. The six year periods from the beginning show amounts varying between the two above given.

The total value of the beet sugar product in France for each of the three years eighteen hundred and seventy three, seventy four, and seventy five was over fifty four million dollars. This required more than sixty thousand persons exclusive of those employed in the field.[1]

In Germany a liberal policy was likewise pursued. And the latest figures compiled show Germany's production in eighty nine to be one million two hundred and twenty thousand tons of beet sugar.

---

[1] Tobin, Labor Report, p 47. The following table shows the amounts produced in France from 1827 to 1837 and 1838 in ten year periods.

In 1827	46,000 tons	" 1837	242,000 tons
" 1837	64,000 "	" 1847	446,000 "
" 1847	151,000 "	" 1857	700,000 "
" 1857	224,700 "		

Austria also had a liberal policy in this matter and produced in eighteen hundred and eighty nine seven hundred and thirty thousand tons.

Russia in the same year produced four hundred and eighty thousand tons.[1] Belgium one hundred and ninety five thousand tons.

In the United States there was in eighteen hundred and eighty seven, a production of two hundred tons of sugar from beets; in eighty eight, eighteen hundred tons; in eighty nine about three thousand; in ninety, about twelve thousand tons;[2] in ninety two more than thirteen thousand tons.[3]

- -

[1] The following table shows production of Germany, Austria and Russia.

In 1877	Germany	produced	289,000	tons
" 1887	"	"	985,000	"
" 1877	Austria	"	341,000	"
" 1887	"	"	460,000	"
" 1877	Russia	"	250,000	"
" 1887	"	"	315,000	"

Tobin, Labor Report. p 47.

European production for the years,

1887	2,451,900	tons
1888	2,764,457	"
1889	3,445,000	"

Tobin, Labor Report, p 48.

[2] Tobin, Labor Report, p 48.

[3] Report of Sec. of Agri. of U.S. 1892, p 468.

Austria also had a [illegible] in cotton and produced in eighteen hundred and [illegible] and thirty thousand tons.

Russia in the same year [illegible] and eighty thousand tons.[1] Belgium [illegible] tons.

In the United States [illegible] eighty seven, a production of [illegible] bales; in eighty eight, eighteen hundred [illegible] about three thousand; in eighty [illegible] tons; in ninety two here [illegible]

---

[1] The following table [illegible] Austria and Russia.

In 1877	Germany	produced	[illegible]
" 1887	"	"	[illegible]
" 1877	Austria	"	[illegible]
" 1887	"	"	[illegible]
" 1877	Russia	"	[illegible]
" 1887	"	"	616,000 "

Tobin, Labor Report, p 47.

European production for the years:

1887	2,151,000	tons
1892	2,764,457	"
1899	3,445,000	"

Tobin, Labor Report, p 46.

[2] Tobin, Labor Report, p 46.

[3] Report of Sec. of Agri. [illegible] 1892, p 420.

California produces more beet sugar than any other state in the Union. The manufacture of this kind of sugar commenced twenty five years ago when a factory was established at Alvarado with a capacity of three hundred tons daily. Subsequently other factories were founded, but have not maintained themselves any length of time. There are two exceptions. Since eighteen hundred and eighty seven a new start seems to have been taken. Then the Pacific Coast Sugar Company was organized; soon afterward the Western Beet Sugar Company. There are now three large beet sugar refineries in the state; at Alvarado, Watsonville and Chino, all are in full operation and turn out large quantities of sugar each year.[1]

- -

[1] Here is a table which shows comparatively the produce of each of the California factories; that of the Nebraska factories and of Utah as well.

Utah Sugar Co. (Dec.19, 1892)	1,473,500	lbs.
Alameda(Cal) Sugar Co. (Dec. 8, 1892)	2,506,860	"
Western Beet Sugar Co. (Jan.27, 1893)	11,390,921	"
Chino Valley Beet Sugar Co. (Oct.28,92)	7,903,541	"
Oxnard (Neb.) Beet Sugar Co.(Nov.19,92)	2,110,110	"
Norfolk " " " (Nov.9, 92)	1,698,400	"
Total----	27,083,322	"

	Production in 1891		1892	
Uta				
Utah	1,094,900	lbs.	1,473,500	lbs.
Cal.	8,175,438	"	21,801,322	"
Neb.	2,734,500	"	3,808,500	"
Total	12,004,838	"	27,083,322	"

Report of Sec. of Agri. of U.S. 1892, pp.467-468.

The Beet sugar factory at Alvarado was brought into existence in 1870. In 1887 it was partially destroyed by the explosion of a boiler; but a new company (The Pacific Coast Sugar

California produces more beet sugar than any other state in the Union. The manufacture of this kind of sugar commenced twenty five years ago when a factory was established at Alvarado with a capacity of three hundred tons a day. Subsequently other factories were founded, but have not maintained themselves any length of time. There are two companies, Chinese, eighteen hundred and eighty, seven [illegible] to have been taken. Then the Pacific Beet Sugar Company was organized; soon afterward the Western Beet Sugar Company. There are now three large beet sugar refineries in the state: at Alvarado, Watsonville and Chino, all are in full operation and turn out large quantities of sugar each year.[1]

---

[1] Here is a table which shows comparatively the production of each of the California factories; that of the Hawaiian factories and of Utah as well.

Utah Sugar Co. (Sta.Ia, 1902)	1,[illegible] lbs.	
Alameda (Cal.) Sugar Co. (Dec.19, 1900)	[illegible]	"
Western Beet Sugar Co. (Dec.27, 1902)	12,[illegible]	"
Chino Valley Beet Sugar Co. (Oct.22,02)	[illegible]	"
Oxnard (Mex.) Beet Sugar Co. (Nov.1,02)	[illegible]	"
Norfolk " " (Nov.1, 2)	[illegible]	"
Total	[illegible]	"

Production in

	1901	
Utah	1,094,000 lbs.	
Cal.	8,175,[illegible]	"
Mex.	2,724,000	"
Total	12,[illegible]	"

Report of Sec. of Agri. [illegible]

The Beet sugar factory at Alvarado was abandoned in 1900. In 1897 it was [illegible] by the extension of a soldier, but a new company (the Pacific [illegible]

A large portion of California is especially adapted to the cultivation of the sugar beet. This fact accounts for the enormous growth in the production of beet sugar from one million two hundred thousand pounds in eighteen hundred and eighty three to the estimated produce for ninety five and ninety six

- -

Company† was organized immediately with a capital of $1,000,000 in 10,000 shares.

Claus Spreckles built the Watsonville factory shortly after his return from Europe in 1887. This is the largest in the state and began with a capacity of 350 tons of beets a day. This has been doubled so now 700 tons a day is its capacity and its influence on surrounding community is very marked.

The factory at Chino was organized in 1890. Buildings cost $200,000, machinery $300,000. Consumed beets from 2250 acres the first year, 4000 acres the second, and 5000 acres the third. It has a capacity of 350 tons of beets a day. The output of this factory for the last five years is as follows:

1891	3,300,000 lbs.	1894	9,471,672 lbs.
1892	7,747,385 "	1895	22,000,000 " of sugar.
1893	15,063,357 "		

The estimated product of the beet sugar factories from 1883 to 1889 is shown in these figures. 1883, 1,200,000 lbs; 1884, 2,134,273; 1885, 1,343,148; 1886, 1,688,258; 1887, 572,466 due to explosion at Alvarado; 1888, 4,280,000; 1889, 5,170,000.

Int. Com. 329; 328, 409-410. San Francisco Call, Dec.25, 1895. p 38. Watts, Labor Report, pp 21-22.

Tobin, Labor Report 46-59. (1889-1890).

A large portion of California is especially adapted to the cultivation of the sugar beet. This fact accounts for the enormous growth in the production of beet sugar from one million two hundred thousand pounds in all that included and eighty three in the estimated produce for nineteen nine or nineteen six

- -

Company) was organized in Detroit, with capital of $1,000,000 in 10,000 shares.

Olsen Sprockles built the Kalamazoo factory shortly after his return from Germany in 1907. Still in the interest in the state and began with a capacity of 500 tons in twenty a day. This has been doubled to ten 700 tons, and it is the largest, especially and its influence on sugar-making, essential, is very marked.

The factory at Chino was organized in 1907. Building cost $200,000, machinery $300,000. Contract costs from 1907 across the first year, 4000 across the second, and 1909 across the third. It has a capacity of 400 tons of beets a day. The output of this factory for the last five years is as follows:

1908 3,300,000 lbs. 1909 3,771,000 lbs.
1909 7,747,000 " 1910 22,000,000 " of sugar.
1910 15,000,000 "

The estimated product of the beet sugar factories in 1909 to 1909 is shown in these figures. 1907, 1,000,000 lbs; 1908, 2,104,272; 1909, 1,349,144; 1910, 1,000,039; 1911, 2,000,000 due to expansion at Kalamazoo; 1912, 1,500,000; 1913, 2,500,000. Cor. Com. 309; 320, 400-410. See Foreign 3-11, Dec.25, 1913. p 39. Yatts, Labor Report, pp 21-2.
Tosin, Labor Report 48-50. (1908-1909).

campaign which is forty million pounds.[1]

5. Manufacture of Flour.

Prominent among the industries of the Pacific coast stands wheat culture. It was the product of the vast wheat fields of the Sacramento and San Joaquin valleys that first gave notice to the world of the immense agricultural possibilities of this western coast. But from the time when the first pioneers left the rocker, the sluice box and the pan, for the plow, the harrow and the reaper down to the present moment, the production of wheat has been one of the most prominent and favored pursuits of the California agriculturist.[2]

Keeping this fact in mind then, a few historical paragraphs will be of interest. Undoubtedly the cultivation of wheat has the honor of being the oldest agricultural industry on the Coast. It may be assumed that this cultivation is a little more than a hundred years old. It dates back to that pioneer wheat field planted on the shores of the San Diego Bay by the hardy hand of the explorers, who first set up there the cross of the church and the Spanish standard. It was the policy of these Franciscan fathers to make the Missions self-support-

- -

[1] San Francisco Chronicle, Dec. 30, 1895.

[2] Int. Com. p 335.

campaign which is forty million pounds.[1]

3. Manufacture of Wheat.

Prominent among the industries of the Pacific coast stands wheat culture. It was the product of the west wheat fields of the Government and San Joaquin valleys that first gave notice to the world of the immense agricultural possibilities of this western coast. But from [illegible] when the first pioneers left the rocky, [illegible] for the plow, the harrow and the reaper down in [illegible] country, the production of wheat has been one of the most prominent and favored pursuits of the California farmer.

Keeping this fact in mind then, the historical paragraphs will be of interest. Historically the cultivation of wheat has the honor of being the oldest agricultural industry on the coast. It may be assumed that this cultivation is a little more than a hundred years old. It dates back to that pioneer wheat field planted on the shores of the San Diego Bay by the hardy band of the explorers, who first set up there the cross of the church and the Spanish sovereign. It was the policy of these Franciscan fathers to make the Mission self-support-

---

[1] San Francisco Chronicle, Dec. 7, 1900.

[2] Ibid. Dec. 7, 1900.

ing.[1] Hence we find that in every mission from San Diego up, wheat was sown as a food supply. Here we see the extension of the industry along the same lines as the extension of civilization through the influence of the founders of the missions.[2]

From the first Californian wheat field situated on the sunny shores of the southern harbor down through the years to the present time have come reports of remarkable harvests garnered. For the period between eighteen hundred and eleven, and eighteen hundred and twenty the average yield of wheat was sixty seven thousand three hundred and eighty bushels for the missions alone. But just previous to this the export trade sprang into existence. And when Mexico became independent of Spain the production of wheat declined. At the same time the export trade was confined to the Hudson Bay Company's posts, to the Russian possessions and to Honolulu. During this time Oregon was taking her first steps toward wheat production. In eighteen hundred and fifty four California produced two million bushels of wheat and four years later she entered the list as a large exporter of breadstuffs. Between the years eighteen hundred and sixty and eighteen hundred and seventy the production of wheat

- -

[1] Manufacturers' and Producers' Monthly, Nov. 1895, p 5.

[2] San Francisco Chronicle, Dec. 30, 1894.

ing.[1] Hence we find that in every decade from the first one, wheat was sown as a food supply. [illegible] the extension of the industry along the same lines as in [illegible] of civilization through the influence of the Franciscans in the missions.[2]

From the first decade [illegible] indicated on the map above of the [illegible] the years to the present time have [illegible] Government period. For the period between [illegible] and eighteen hundred and twenty [illegible] seven thousand three hundred [illegible] for the three-lane alone. But just previous [illegible] trade opened into existence. And [illegible] production of wheat declined. [illegible] trade was confined to the Indians [illegible] possessions and so forth. During [illegible] for first stage [illegible] and fifty four [illegible] wheat and four [illegible] portion of breadstuffs. [illegible] sixty and eighteen hundred [illegible]

---

[1] [illegible]

[2] [illegible]

began to move to the interior valleys where it was found that the wheat was brighter, drier and was less exposed to injury during transportation. The next ten years was a prosperous period and with the extension of railroads went the increase in wheat acreage. But during the ten following years not only was the maximum, but also the minimum yield reached. This was due, says Horace Davis to heavy rainfall in the one case and light rainfall in the other.[1]

The first attempt at flour making was in seventeen hundred and eighty two at the Missions. There were no flour mills but wheat was ground in the most primitive fashion. In seventeen hundred and eighty six La Perouse gave the Carmel Mission

- -

[1] The following table gives yield and acreage from 1868 to 1890.

	acreage	bushels
1868	1,050,000	21,000,000
1869	1,098,901	20,000,000
1870	746,052	14,175,000
1871	1,523,363	16,757,000
1872	2,198,360	25,600,000
1873	2,592,899	21,504,000
1874	2,150,000	28,380,000
1875	2,163,636	23,800,000
1876	2,307,692	30,000,000
1877	2,315,789	22,000,000
1878	2,470,000	41,990,000
1879	2,500,000	35,000,000
1880	2,117,350	33,877,000
1881	2,367,200	31,406,000
1882	2,767,000	36,046,000
1883	2,794,000	36,322,000
1884	3,360,000	44,320,000

began to move to the interior valley where it was found that the wheat was brighter, drier and was less damaged by injury during transportation. The next two years [illegible] prospered and with the extension of railroads [illegible] the interior in wheat acreage. But during the [illegible] only was the maximum, but also the [illegible]. The [illegible] says Horace Davis to have [illegible] and light rainfall in the [illegible].[1]

The first attempt [illegible] between hard red and eighty two of the [illegible]. Where [illegible] but wheat was grown in the [illegible] in seven-teen hundred and eighty six [illegible] gives the [illegible]

---

[1] The following table gives total acreage from 1868 to 1900.

	Acreage	Bushels
1868	1,420,000	[illegible]
1869	1,[illegible]	[illegible]
1870	[illegible]	[illegible]
1871	[illegible]	[illegible]
1872	2,[illegible]	[illegible]
1873	[illegible]	[illegible]
1874	2,120,000	[illegible]
1875	2,[illegible]	[illegible]
1876	2,[illegible]	[illegible]
1877	[illegible]	[illegible]
1878	[illegible]	[illegible]
1879	[illegible]	[illegible]
1880	[illegible]	[illegible]
1881	[illegible]	[illegible]
1882	[illegible]	[illegible]
1883	[illegible]	[illegible]
1884	3,[illegible],000	[illegible]

a handmill, which performed the work of four women in the old way. In seventeen hundred and ninety six a flour mill was erected at Santa Cruz which was followed by two or three more later on. These mills were run by water power and operated a single pair of stones. By eighteen hundred and forty eight the pioneer state (Oregon) in the manufacture of flour had nine mills which were more in accordance with our idea of a flouring mill. One of the earliest establishments in California was the Golden Gate Mill,[1] built in eighteen hundred and fifty two. The largest mill[2] in the state is at Vallejo. There are, however, about

- -

1885	2,822,400	26,592,000
1886	3,104,640	36,185,000
1887	2,760,235	30,429,000
1888	2,351,300	28,451,000
1889	3,291,820	43,781,000
1890	2,426,730	29,121,000

Int. Com., p 304.

[1] This mill was established by Couro and Co. It had a capacity of 300 bbls. a day. In 1860 it passed into the possession of Horace Davis, who still owns it. The mill now has a capacity of 1000 bbls. a day. Int. Com. p 408.

[2] This mill started with a capacity of 150 bbls. a day. in 1864 increased to 650. In 1874 anadditional mill was built, with 800 bbl. capacity. In 1883 the mills were enlarged and introduced the French roller process; these two mills combined have a capacity of 2200 bbls. per day. Later the business was incorporated and now with a new mill in Contra Costa Co. of more than 4200 bbls. a day.

The following are the largest mills in the State.

Name of Mill	Location	Daily Capacity
Starr Mill	Port Costa	2000 bbls.
Starr 'A'	Vallejo	1400 "

a sandmill, which performed the work of four women in the old way. In seventeen months and nearly six a flour mill was erected at Santa Cruz which was followed by two or three more later on. These mills were run by water power operated single pair of stones. By eighteen hundred and [illegible] eight the pioneer state (Oregon) in the manufacture of flour had [illegible] mills which were more in accordance with modern [illegible] mill. One of the earliest establishments [illegible] was the Cotton Gin Mill,[1] built in eighteen hundred and fifty two. The Starr-out mill[2] in the state is at Salem. There are, however, about

- -

1863	2,[illegible],000	[illegible]
1869	2,[illegible],000	[illegible]
1877	2,[illegible],000	[illegible]
1883	3,[illegible],000	[illegible]
1888	3,[illegible],000	[illegible]
1890	4,[illegible],000	[illegible]

Int. Cons., p 324.

[1] This mill was substituted by Cotton and Co. It had a capacity of 250 bbls. a day. In 1883 it passed into the possession of Horace Davis, who still owns it. The mill now has a capacity of 1500 bbls. a day. Int. Cons. p 327.

[2] This mill started with a capacity of 150 bbls. a day. In 1884 increased to 650. In 1888 additions [illegible] mill was built with 800 bbl. capacity. In 1890 the mills were enlarged and in introduced the French roller process; [illegible] mills so [illegible] have a capacity of 1500 bbls. per day. [illegible] the machinery was incorporated and now with a new mill [illegible] more than 4000 bbls. a day.

The following are the largest mills in the state.

Name of Mill	Location	Mills Capacity
Starr Mill	Port Ludlow	3000 bbls.
Starr 'A'	Vancouver	1400

fifty first class mills in California with a total capacity of about twenty thousand barrels a day. About seven hundred and fifty men are given employment. All the larger mills run continuously.

The subjoined table shows the amount of Pacific Coast flour manufactured. In eighteen hundred and fifty five and fifty six the amount was one hundred and seventy thousand barrels plus; while in eighteen hundred and ninety three and ninety four the amount was less than two million barrels. But this by no means represents the highest ever reached which was more than five million barrels in the crop year of eighteen hundred and ninety and ninety one.[1] This was due to great demands for Coast flour.

- -

Stockton City	Stockton	1200 bbls.
Crown	Stockton	1000 "
Golden Gate	San Francisco	1000 "

The other mills range from 800 bbls to 150 bbls. daily capacity
Int. Com. p 409; Walts, Labor Report, p 16-17.

[1] This table represents receipts of flour at San Francisco by crop years.

1855 - '56	170,591 bbls.	1856 - '57	131,350 bbls.
1857 - '58	127,312 "	1858 - '59	226,614 "
1859 - '60	370,876 "	1860 - '61	491,237 "
1861 - '62	455,078 "	1862 - '63	599,300 "
1863 - '64	397,192 "	1864 - '65	246,683 "
1865 - '66	667,374 "	1866 - '67	1,201,585 "
1867 - '68	824,696 "	1868 - '69	831,920 "

fifty first class mills in California with a total capacity of about twenty thousand barrels a day. About seven hundred and fifty men are given employment. All the larger mills run continuously.

The subjoined table shows the amount of Pacific Coast flour manufactured. In eighteen hundred and sixty five and fifty six the amount was one million four hundred and thirty four barrels plus; while in eighteen hundred and ninety three and nine ty four the amount was less than two million barrels. The cause by no means represents the highest. Our maximum output was more than five million barrels in the corn year of eighteen hundred and ninety and ninety one.[1] This was due to great demands for Coast flour.

- -

Stockton City	Stockton	1200 bbls.
Crown	Stockton	1000 "
Golden Gate	San Francisco	1000 "

The other mills range from 600 bbls up 1000 bbls. daily capacity. Cen. p 400; Walts, Labor Report, p 16-17.

[1] This table represents roughly the flour at San Francisco by corn years.

1885 - '86	170,000 bbls.	1888 - '89	180,000 bbls.
1887 - '88	127,312 "	1889 - '90	172,014 "
1888 - '89	370,372 "	1890 - '91	401,257 "
1891 - '92	455,778 "	1892 - '93	480,000 "
1893 - '94	527,125 "	1894 - '95	518,000 "
1895 - '96	607,174 "	1896 - '97	507,000 "
1897 - '98	824,000 "	1898 - '99	797,000 "

1869 - '70	684,433	bbls.	1870 - '71	483,653	bbls.
1871 - '72	586,998	"	1872 - '73	915,960	"
1873 - '74	565,730	"	1874 - '75	448,419	"
1875 - '76	473,568	"	1876 - '77	515,014	"
1877 - '78	379,456	"	1878 - '79	2,596,808	"
1879 - '80	2,712,992	"	1880 - '81	2,716,445	"
1881 - '82	3,227,242	"	1882 - '83	4,028,299	"
1883 - '84	5,091,272	"	1884 - '85	5,215,592	"
1885 - '86	4,831,154	"	1886 - '87	4,408,362	"
1887 - '88	732,662	"	1888 - '89	1,196,021	"
1889 - '90	1,463,194	"	1890 - '91	5,768,578	"
1891 - '92	1,415,962	"	1892 - '93	1,280,324	"
1893 - '94	1,055,824	"			

San Francisco Chronicle, Dec. 30, 1894.

1968 - '70	604,465	bbls.	
1971 - '73	500,800	"	
1973 - '74	506,720	"	
1975 - '76	415,865	"	
1977 - '78	372,440	"	
1979 - '80	2,715,865	"	
1981 - '82	3,227,215	"	
1983 - '84	4,007,257	"	
1985 - '86	4,271,164	"	
1987 - '88	728,840	"	
1989 - '90	1,475,164	"	
1991 - '92	1,475,890	"	
1993 - '94	1,255,864	"	
1995 - '96	1,[illegible]	"	
1997 - '98	[illegible]	"	
1999 - '00	[illegible]	"	
2001 - '02	[illegible]	"	
2003 - '04	[illegible]	"	
2005 - '06	[illegible]	"	
2007 - '08	[illegible]	"	
2009 - '10	[illegible]	"	
2011 - '12	[illegible]	"	
2013 - '14	[illegible]	"	

See Tri-Valley Herald, [illegible], 1984.

Chapter III.

Factors in the Pacific Coast's Manufacturing Development.

It is intended in this chapter to give an account of some of the most important factors, that have entered into the development of the manufacturing industries of the Pacific Coast. For this purpose the industries of California will from this basis, because information of a very reliable character has not yet come in from other sections of the Coast.

That the Pacific Coast has from a geographical position great facilities for manufacturing is an obvious fact. It possesses an immense water power that is not utilized at all. What can and will be done with this power is hard to definitely determine. Other factors, however, that have a closer connection for our purpose are (1) Enterprise, (2) Labor, (3) Fuel, (4) Wages, (5)Interest, (6) Insurance, (7) Taxes, (8) The railroad.

(1) Enterprise.

It has been and is a frequent charge today that the capitalists of the Pacific Coast are void of enterprise. That they would not venture their capital in certain kinds of under-

Chapter III.

Factors in the Pacific Coast's Manufacturing Development.

It is intended in this chapter to give an account of some of the most important factors, that have entered into the development of the manufacturing industries of the Pacific Coast. For this purpose the chronological order of narrating will be used. This basis, however, because information of a very valuable character has not yet come in from other sections of the Coast.

That the Pacific Coast has been a geographical position great facilities for manufacturing, is an obvious fact. It possesses an immense water power that is not utilized at all. Coal can and will be dug with data never it been to artificial determine. Other factors, however, have been those which tion for our purpose are (1) Materials, (2) Power, (3) Transport, (4) Wages, (5) Capital, (6) Immigrants, (7) Cities, (8) The railroad.

(1) Water Power.

It has been said in a frequent manner that the capitalists of the Pacific Coast have said of water power. They they would not venture their capital in artificial kinds of power

takings. Is this charge true? Probably not. It was this great enterprising spirit that started and still keeps up the manufactures of the Coast. The fact that there are too small a number of factories, that there is a decline in woolen mills, as of other manufacturing industries is not due to lack of enterprise on the part of man with money. But high wages, the independent spirit and condition of many of the poor people, taxes, high price for fuel and the necessity of importing supplies of many kinds, all have discriminated against manufacturing industries of our coast.

As a matter of fact many California factories have been unprofitable; this is especially true as to the earlier ventures in various branches of industry. Many of them were premature and for years were kept in operation not because they were profitable but because the buildings and machinery could not be used for anything else without greater loss.

While these facts account for much of the manufacturing ill success, yet a glance at the other side shows a different result and spirit from that suggested by the charge. The characteristic feature of Pacific Coast undertakings is a remarkable boldness in investment. Scarcely a branch of occupation pursued here that has been without some undertaking noted for

taking. In this change Lowell probably not. It was this great enterprising spirit that started and still keeps up the manufactures of the Coast. The fact that there is too small a number of factories, that there is a decline in woolen mills, as of other manufacturing industries is not due to lack of enterprise on the part of men with money. But [illegible] wages, the independent spirit and condition of many of the poor people, making high wages for that and the necessity of importing foreigners of many kinds, [illegible] industrial industries of our coast.

As a matter of fact many Californian factories have been unprofitable; this is chiefly true as to the woolen varieties in various branches of industry. Many of them were premature and for years were kept in operation not because they were profitable but because the buildings and the machinery could not be used for anything else without greater loss.

While these facts account for the manufacturing ill success, yet a glance at the other side shows a different result and spirit from that suggested by the climate. The climate certainly favors of Pacific Coast manufacturers in comparable business in investment. Scarcely a report of investigation printed here that has been without some unfavorable notes for

its comprehensiveness of plan and amount of capital. The world has nothing in many respects to equal the results of Californian enterprise.

The important results achieved in California should be credited mainly to the exceptional intelligence and energy of her inhabitants. It is said that they have ransacked the habitable globe for the best workmen, the most skilled engineers, the best tools, the strongest and fastest horses, the cows that give the most milk and the most prolific vines and trees.[1]

(2) Labor

Another important factor is labor. The most important aspect of this question is the Chinaman and his services. Without him our manufactures on this Coast would have been economically impossible, especially during their earlier stages.

While this is true yet the presence of the Chinamen has worked against Pacific Coast manufactures, in that it prevented many from coming who would be of service to the Coast's industries in a more positive way. But for the most part the Chinaman is more of a supplement than a substitute for white labor.

(3) Wages.

- -

[1] Hittell, Pac. Coast Ind., 49-53.

its comprehensiveness of plan and amount of capital. The world has nothing in many respects to equal the results of Californian enterprise.

The important results achieved in California should be credited mainly to the exceptional intelligence and energy of her inhabitants. It is said that they have remodelled the habitable globe for the best workmen, the most skilled engineers, the best tools, the strongest and fastest horses, the cows that give the most milk and the most prolific vines and trees.

(2) Labor

Another important factor is labor. The most important part of this question is the Chinaman and his services. Without him our manufactures on this Coast would have been economically impossible, especially during their earlier stages.

While this is true yet the presence of the Chinaman has worked against Pacific Coast manufactures, in that it prevented many from coming who would be of service to the Coast's industries in a more positive way. But for the most part the Chinaman is more of a supplement than a substitute for white labor.

(3) Wages.

- -

[1] Mitchell, The. Coast Ind., 60-62.

Another factor is wages. The Pacific Coast pays higher wages in general than any other section of the Union. California, however, pays the highest wages to the employeesofof the woolen manufacture. The following comparison shows the wages of Adult Male, Adult Female and Youth in the different states of the Union.

	Male	Female	Youth.
Maine	$1.42	$0.96	$0.71
New Hampshire	1.61	1.15	--
Vermont	1.31	1.11	.59
Mass.	1.35	1.03	.69
Ct.	1.46	.96	.54
N.Y.	1.38	.94	.61
N.J.	1.21	.83	.50
Penn.	1.65	1.10	.70
Del.	1.63	1.27	.61
Md.	1.47	.93	.50
N.C.	1.07	.70	.43
Ky.	1.69	.79	.60
Ind.	1.42	.97	.62
Ill.	1.65	.80	.52
Ia.	1.81	--	.67
Cal.	2.45	--	.75

In the cotton mills the wages of men run from $1.65 to $3.50 a day; of women, from $1.00 to $1.80; of boys and girls, from .50 to $1.00. The hours constituting a day's work are ten. That which the cotton industry has to contend with is long hours and low wages in southern states. In North Carolina the wages are the lowest. There formen receive from $1.25 to $2 per day; weavers, from $1.50 to $2.25. Men get from .50 to $1

Another factor is wages. The Pacific Coast pays higher wages in general than any other section of the Union. California, however, pays the highest wages in the employment of the woolen manufacture. The following comparison shows the wages of Adult Male, Adult Female and Youth in the different states of the Union.

	Male	Female	Youth
Maine	$2.42	$0.[illegible]	$0.71
New Hampshire	1.[illegible]	1.[illegible]	--
Vermont	1.[illegible]	1.12	.[illegible]
Mass.	1.38	1.02	.[illegible]
Ct.	1.[illegible]	.[illegible]	.[illegible]
N.Y.	1.38	.[illegible]	.[illegible]
N.J.	1.[illegible]	.[illegible]	.[illegible]
Penn.	1.[illegible]	1.10	.[illegible]
Del.	1.03	1.17	.[illegible]
Md.	1.47	.[illegible]	.50
N.C.	1.07	.70	.42
Ky.	1.[illegible]	.[illegible]	.[illegible]
Ind.	1.42	.[illegible]	.[illegible]
Ill.	1.[illegible]	.[illegible]	.[illegible]
Ia.	1.[illegible]	--	.[illegible]
Cal.	2.45	--	.75

In the cotton mills the wages of men run from $1.68 to $2.50 a day; of women, from $1.02 to $1.30; of boys and girls from .50 to $1.00. The hours constituting a day's work are ten. That which the cotton industry has to contend with is long hours and low wages in southern states. In South Carolina the wages are the lowest. There looms weaving from $1.25 to $2 per day; weavers, from $1.50 to $2.[illegible]. Men get from .50 to $1

women, from .40 to .60 a day. The same contrast is seen in almost every industry. In some cases it does not work as a hindrance, for the high wages attract the best mechanics or workmen.

(4) Interest.

The manufacturers are placed at a decided disadvantage in their effort to compete with those of the states east of the Rocky mountains.Here in many industries the owners have to carry large amounts of stock all the time, but must sell on three or four month's credit. Raw material must be paid for on delivery, and the hands must be paid weekly or monthly. Hence larger amounts of money must be kept on hand to keep the mill in operation, and to do this money must be borrowed. In the East the manufacturer can obtain money from four to fiver per cent interest, payable semi-annually; here he must pay from seven to eight per cent interest payable monthly.

Fuel:
(5) Fuel is about three times higher here than in the East. There coal is obtained for less than three dollars a ton. While on this coast with one or two exceptions, coal costs from seven and one half to eight and one half dollars.

The extent, however, of the development of the oil

women, from .40 to .60 a day. The work continued in each [illegible] most every industry. In some cases it does not [illegible] a [illegible] means, for the high wages attract the best mechanics or workmen.

(4) Interest.

The manufacturers are faced at a certain disadvantage in their effort to compete with those of the states west of Rocky mountains.Here in order to [illegible] by large amounts of money [illegible] the time, and that will be for [illegible] or four month's credit. The material must be sold for on [illegible] livery, and the bills must be paid monthly. [illegible] money. Larger amounts of money must be kept in hand to keep the mill in operation, and to do this money must be borrowed. In the East the manufacturer can secure money from [illegible] to five per cent interest, [illegible] seven to eight per cent interest [illegible].

(5) Fuel: Fuel is often three times higher here than in the east. There coal is obtained for less than three dollars a ton. While on this coast with one or two exceptions, coal costs from seven and one half to eight and [illegible] dollars.

The extent, however, of the difference [illegible]

wells is sufficient now to have some influence. Petroleum has been found to be an admirable substitute for coal and is furnished at a much less cost. This is a new factor and only the future will develop its importance in manufacturing industries of the Pacific Coast. Another very important aspect of the fuel question is the transmission of propelling force in the form of electricity. This is destined to revolutionize the manufacturing industries. Already are many of Sacramento's establishments running their machinery by power generated by the water force fourteen miles away. Other places are putting in plants to utilize their waste power.

(6) Taxes.

Many states in the Union exempt manufactures from taxation. Those industries that need encouragement, in many places have to bear no tax until sufficiently well established to do, but California taxes everything about a factory that can be taxed at all. Many instances might be cited but one will suffice, in eighteen hundred and eighty nine the Pioneer Woolen Mills had to pay seven thousand dollars in taxes. Does this encourage and revive a declining industry? Certainly not.

wells is sufficient now to have a [illegible]. Petroleum has been found to be an admirably suitable fuel [illegible] and is furnished at a much less cost. This is a [illegible] and only [illegible] future will develop its importance in [illegible] industries of the Pacific Coast. Another very [illegible] of the [illegible] question is the transmission of [illegible] power in the form of electricity. This is destined to [illegible] the manufacturing industries. Already one [illegible] has established works running their machinery by power [illegible] by the water [illegible] away fourteen miles. Other [illegible] are getting in plants to utilize their waste power.

(8) Taxes.

Many states in the Union [illegible] from taxation. These industries [illegible]. In many places have to boast no tax [illegible] to do, but California [illegible] that can be taxed at all. Many [illegible] supplies, in eighteen months and [illegible] an mills had to pay seven [illegible]. This discourages and revives a [illegible].

(7) Railroads.

Finally, we come to the railroad. Before the coming of the railroad the Pacific Coast manufacturer were protected from the competition of the Eastern manufacturer. Those things made at home found a home market so long as there was any demand at all. But itis impossible to estimate just what and how much influence the factor has had in the coast's manufacturing development. For when it came in and began to grow it opened up the great area lying to the east of the Sierras to the California and Oregon manufacturer. But at the same time it placed a check upon production here since commodities from this quarter met those from the east in the new area. This factor constitutes an element of many sides and they all can only be shown by the study of the development of the Pacific railroads on the Coast.

(7) Railroads.

Finally, we come to the railroad. Before the coming of the railroad the Pacific Coast manufacturer were protected from the competition of the Eastern manufacturer. Those things made at home found a home market so long as there was any demand at all. But this impossible to estimate just what and how much influence the factor has had in the coast's manufacturing development. For when it came in and began to grow it opened up the great area lying to the east of the Sierras to the California and Oregon manufacturer. But at the same time it placed a check upon production here since commodities from this quarter met those from the east in the new area. This factor constitutes an element of many sides and they all can only be shown by the study of the development of the Pacific railroads on the Coast.

BIBLIOGRAPHY.

Allan, A.G. Water Powers of Western States. Engineering Magazine, April, 1895.

Alta California Almanac, 1877-78.

Bancroft, H.H. History of California, 7 vols. San Francisco, 1890.

Bancroft, H.H. History of Oregon.
2 vols. San Francisco, 1886.

Bancroft, H.H. History of Washington, Idaho, and Montana.
San Francisco, 1890

Beard, Jno. In Chit Chat Club of San Francisco, 1880.

Bowles, Samuel. Our New West. New York, 1869.

Census Reports for 1860, 1870, 1880, and 1890.

Cronise, T.F. The Natural Wealth of California.
San Francisco, 1868.

Culmer, H.L.A. The Resources and Attractions of Utah, Salt Lake City, 1894.

Dwinell, Rev. J.E. The Higher Reaches of the Great Continental Railway. A Highway for our God. A sermon; Sacramento, May 9, 1869.

Eddy, J.M. In Humbolt Co. Chamber of Commerce, S.F., 1893.

BIBLIOGRAPHY.

Allan, A.G. Water Powers of Western States. Engineering Mag-
azine, April, 1899.

Alta California Almanac, 1877-78.

Bancroft, H.H. History of California, 7 vols. San Francisco,
1890.

Bancroft, H.H. History of Oregon.
2 vols. San Francisco, 1888.

Bancroft, H.H. History of Washington, Idaho, and Montana.
San Francisco, 1890

Beard, Jno. In Gold Chat Club of San Francisco, 1888.

Bowles, Samuel. Our New West. New York, 1869.

Census Reports for 1880, 1870, 1880, and 1890.

Cronise, T.F. The Natural Wealth of California.
San Francisco, 1868.

Culmer, H.L.A. The Resources and Attractions of Utah, Salt
Lake City, 1884.

Dwinell, Rev. J.R. The Higher Readings of the Great Continen-
tal Railway. A Highway for our God. A sermon; Sacra-
mento, May 9, 1869.

Eddy, J.M. In Humbolt Co. Chamber of Commerce, S.F., 1893.

Evolution of Shipping and Ship building. Overland Monthly, Feb. and March, 1895.

History of Napa and Lake Counties, California. San Francisco, 1881.

History of Sacramento County, California. Oakland, 1880

History of Santa Clara County, California. San Francisco, 1881.

History of Sutter County, California. Oakland, 1879.

Hittell, J.S. The Commerce and Industry of the Pacific Coast. San Francisco, 1882.

Hittell, J.S. The Resources of California. San Francisco, 1869.

Industry. A Magazine. San Francisco.

Journal of Electricity. San Francisco, September, 1895.

Journal of the Proceedings of the California State Grange, 1890

Long Distance Power Transmission by Electricity at Portland, Oregon. Engineering News, Oct. 10, 1895.

Manufacturers' and Producers' Monthly, Nov. and Dec., 1895.

Meyrick, H. Santa Cruz and Monterey. San Francisco, 1880.

Evolution of Shipping and Ship Building. Overland Monthly, Feb. and March, 1892.

History of Napa and Lake Counties, California.
San Francisco, 1881.

History of Sacramento County, California.
Oakland, 1880.

History of Santa Clara County, California.
San Francisco, 1881.

History of Sutter County, California.
Oakland, 1879.

Hittell, J.S. The Commerce and Industry of the Pacific Coast.
San Francisco, 1882.

Hittell, J.S. The Resources of California.
San Francisco, 1880.

Industry. A Magazine. San Francisco.

Journal of Electricity. San Francisco, September, 1892.

Journal of the Proceedings of the California State Grange, 18

Long Distance Power Transmission by Electricity at Portland, Oregon. Engineering News, Oct. 10, 1895.

Manufacturers' and Producers' Monthly, Nov. and Dec., 1892.

Meyrick, H. Santa Cruz and Monterey. San Francisco, 1880.

North, S.D. Wool Manufactures of the United States.
Monograph in 11th Census.

Pamona Board of Trade, Oct., 1891.

Powell, J.J. The Golden State and Its Resources.
San Francisco, 1874.

Report, Internal Commerce of United States, 1884, 1885, 1890.

Report, San Francisco Chamber of Commerce, 1882.

Report, Eighteenth Annual of Portland, Oregon, Chamber of
Commerce, Portland, 1892.

Salt Lake City Tribune, June 1, 1891.

San Francisco Call, December 25, 1895. The Call in general
for the past six months.

San Francisco Chronicle, Jan. 1, 1892; Dec. 30, 1894; June 1,
1892.

San Francisco Journal of Commerce, Sept. 22, 1892. Oct 31, 1895.

San Francisco and its Resources.
San Francisco, 1894.

Santa Clara Clunty, California, and its Resources.
San Jose, 1895.

Sacramento County and its Resources. Sacramento, 1894.

Scientific American, June - Dec. 1891; April, 1892. Supple-
ment. Nov. 9, 1895.

North, S.D. Wool Manufactures of the United States.
Monograph in 11th Census.

Pacific Board of Trade, Oct., 1891.

Powell, J.J. The Golden State and Its Resources.
San Francisco, 1874.

Report, Internal Commerce of United States, 1884, 1886, 1890.

Report, San Francisco Chamber of Commerce, 1888.

Report, Eighteenth Annual of Portland, Oregon, Chamber of
Commerce, Portland, 1892.

Salt Lake City Tribune, June 1, 1891.

San Francisco Call, December 26, 1890. The Call in general
for the past six months.

San Francisco Chronicle, Jan. 1, 1892; Dec. 30, 1894; June 1,
1892.

San Francisco Journal of Commerce, Sept. 12, 1892. Oct 22, 18
San Francisco and Its Resources.
San Francisco, 1884.

Santa Clara County, California, and Its Resources.
San Jose, 1895.

Sacramento County and Its Resources. Sacramento, 1894.

Scientific American, June - Dec. 1891; April, 1892. Supple-
ment. Nov. 9, 1895.

Seattle Post Intelligence, Sept. 27, 1895.

Scott, Irving M. In Chit Chat Club, San Francisco, Nov.14, 1881

Shaler, N.S. The United States of America.
2 vols. New York, 1894.

Smalley, S.V. In Century Magazine, 1883.

The West Trade. Tacoma, 1896.

The State Register and Year Book of Facts.
San Francisco, 1857, 1859.

Tinkham, G.H. A History of Stockton. San Francisco, 1880

Thompson, S.A. Possibilities of the Great Northwest.
Review of Reviews, Nov., 1893.

Tobin, J.J. In Bureau of Labor Statistics of California,
1889 - 90.

Two Years of Progress, 1894-'95. Los Angeles, 1895.

Transactions of California Agricultural Society.

Utah: Account of agricultural Stockraising and Mineral Resources, St. Louis, 1894.

Walker, D.H. Pioneers of Prosperity. San Francisco, 1895.

Walts, G.W. In Bureau of Labor Statistics of California,
1891 - '92.

Seattle Post Intelligence, Sept. 27, 1893.

Scott, Irving M. In Cult Club, San Francisco, Nov.14, 1

Shaler, N.S. The United States of America.

2 vols. New York, 1894.

Smalley, S.V. In Century Magazine, 1893.

The West Trade. Tacoma, 1890.

The State Register and Year Book of Facts.

San Francisco, 1857, 1858.

Tinkham, G.H. A History of Stockton. San Francisco, 1900

Thompson, S.A. Possibilities of the Great Northwest.

Review of Reviews, Nov., 1893.

Tobin, J.J. In Bureau of Labor Statistics of California,

1899 - 00.

Two Years of Progress, 1894-'95. Los Angeles, 1895.

Transactions of California Agricultural Society.

Utah: Account of agricultural Stock raising and Mineral Re-

sources, St. Louis, 1904.

Walker, D.H. Pioneers of Prosperity. San Francisco, 1898.

Wales, G.W. In Bureau of Labor Statistics of California,

1891 - '92.

These references by no means exhaust the list, but they are sufficient to show the character of the material that must be used in a work of this kind. Some of these have the ring of the real estate office; some constitute excellent material from original sources; and some ~~is~~ are of secondary value, because second hand. Besides these, personal talks with those actively engaged in the various industries have thrown some light upon the subject. A special note in the case of one reference in foot-note is needed. Mr. H.D. Sheldon gave a report of his thesis in the Economic Seminary in March, 1896 and can not be seen as yet in print.

No section of the Union has a greater variety of topics for historical and economic students than the Pacific Coast. Many valuable phases are yet practically unknown. One of these phases is stated by the subject of this paper, but as yet no adequate treatment has been made. The material is apparently abundant and with patient and careful toil it may be put into an accessible form. A reliable and trustworthy account of Pacific Coast Manufactures is demanded. But where is the man to do the work? Is he forth coming? It is hoped that he is.

These references by no means exhaust the list, but th
are sufficient to show the character of the material that ma
be used in a work of this kind. Some of these have the ring
the real estate office; some constitute excellent material
from original sources; and some is of secondary value, becau
second hand. Besides these, personal talks with those active
engaged in the various industries have thrown some light upo
the subject. A special note in the case of one reference in
foot-note is needed. Mr. W.D. Sheldon gave a report of his
thesis in the Economic Seminary in March, 1930 and can not b
seen as yet in print.

The position of the Union has a greater variety of topi
for historical and economic attention than the Pacific Coas
Many valuable phases are yet practically unknown. One of the
phases is stated by the subject of this paper, but as yet no
adequate treatment has been made. The material is apparently
abundant and with patient and careful toil it may be put int
an accessible form. A reliable and trustworthy account of Pa
cific Coast Manufactures is demanded. But where is the man t
do the work? Is he north coming? It is hoped that he is.